IN SEARCH OF PREHISTORIC SURVIVORS

DO GIANT 'EXTINCT' CREATURES STILL EXIST ?

KARL P. N. SHUKER

IN SEARCH OF PREHISTORIC SURVIVORS

Before Darwin it was believed that all living things were exactly the same today as they had always been – immortal and immutable; thus the idea of the extinction and transformation of animal species was implacably opposed. Yet, even though the development of species via evolutionary change is nowadays a widely accepted scientific philosophy, the notion that prehistoric creatures could have survived into modern times remains a taboo subject for the majority of present-day zoologists. For some reason, the same unquestioning opposition that was once faced by the theory of evolution is now being applied in an equally illogical manner to the concept of prehistoric survival.

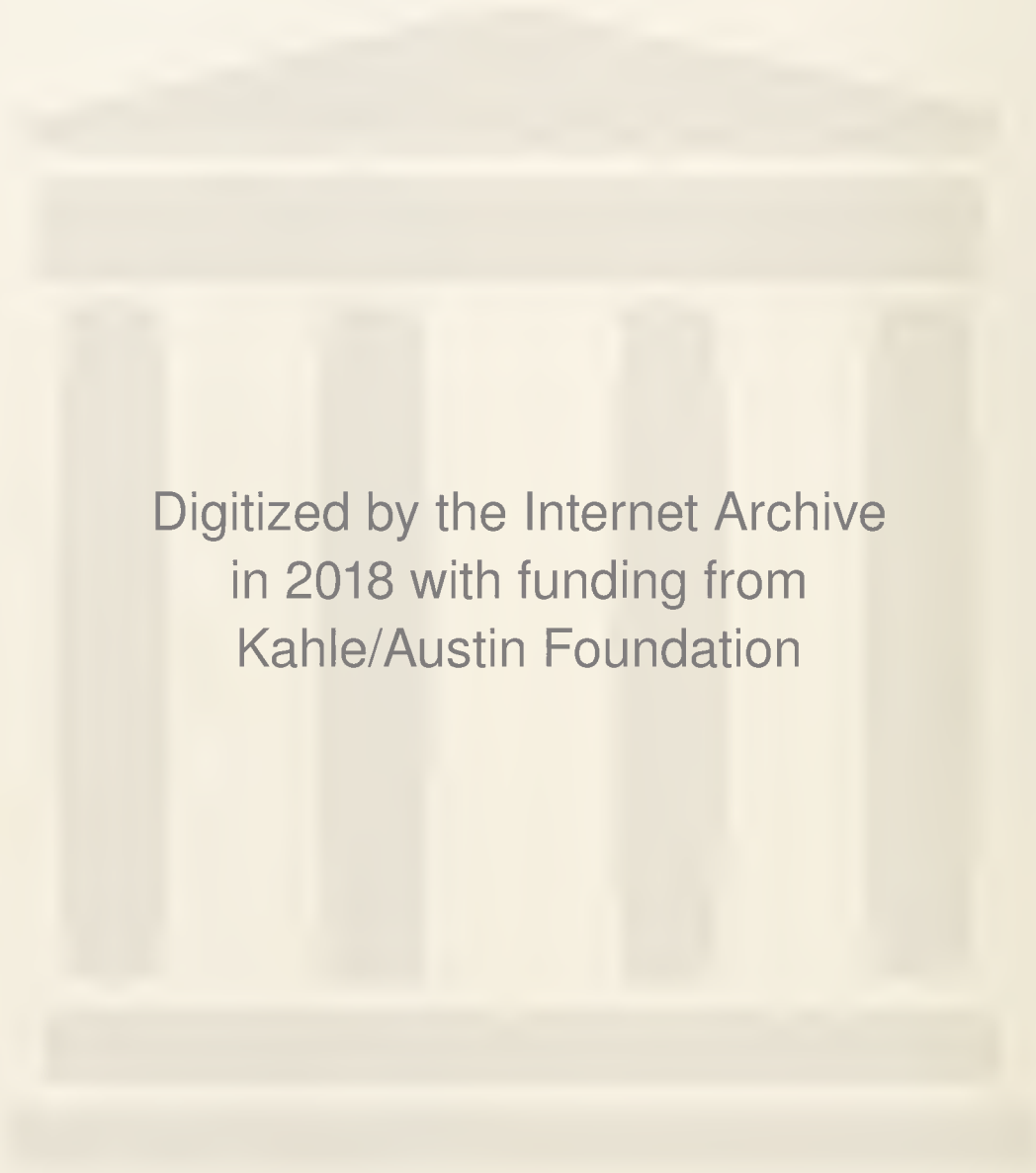
In this ground-breaking book, however, noted zoologist Dr Karl P.N. Shuker reveals how the annals of contemporary science contain many recently-discovered, living examples of ancient creatures – creatures hitherto believed to have vanished long ago from our planet. By extension, these 'living fossils' – such as New Zealand's tuatara (a lizard-like dinosaur contemporary) and that famously archaic lobe-finned fish, the coelacanth – provide strong evidence for believing that all is not what it might seem in the world of orthodox zoology.

Naturally, there is no suggestion that a veritable 'Lost World' of prehistoric survivors is waiting to be uncovered by a true-life Professor Challenger. Nevertheless, there are so many reports of unexplained animals strongly resembling long-vanished creatures that it would be rash to dismiss entirely the likelihood that certain prehistoric lineages have elusive modern-day representatives still awaiting formal scientific discovery.

This book presents some startling and controversial possibilities – including the prospect of living dinosaurs amid the world's most impenetrable swamplands; winged beasts irresistibly reminiscent of pterodactyls and prehistoric giant vultures, long-necked plesiosaurian sea serpents, and a plethora of mammalian Methuselahs, ranging from surviving sabre-toothed tigers to living mammoths. Traversing the frontiers and backwaters of science, this major work of cryptozoology (the scientific study of mysterious, unexplained animals) will make us all take a new look at what might still be sharing our world.

Foreword by noted US zoologist, Prof. Roy P. Mackal.

Boston Public Library
Copley Square


Digitized by the Internet Archive
in 2018 with funding from
Kahle/Austin Foundation

https://archive.org/details/insearchofprehis00shuk

In Search of Prehistoric Survivors

In Search of PREHISTORIC SURVIVORS

Do Giant 'Extinct' Creatures Still Exist?

Karl P.N. Shuker

BLANDFORD

QE763
.S47
1995

A BLANDFORD BOOK
First published in the UK 1995 by Blandford
A Cassell Imprint
Cassell plc, Wellington House
125 Strand, London WC2R OBB

Text copyright © 1995 Karl P.N. Shuker

The right of Dr Karl P.N. Shuker to be identified as author of this work has been asserted by him in accordance with the provisions of the UK Copyright, Design and Patent Act 1988

All rights reserved. No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording or any information storage and retrieval system, without permission in writing from the copyright holder and publisher.

Distributed in the United States by Sterling Publishing Co., Inc.
387 Park Avenue South, New York, NY 10016-8810

Distributed in Australia by Capricorn Link (Australia) Pty Ltd
2/13 Carrington Road, Castle Hill, NSW 2154

A Cataloguing-in-Publication Data entry for this title is available from the British Library

ISBN 0–7137–2469–2

Typeset by Keystroke, Jacaranda Lodge, Wolverhampton
Printed and bound in Great Britain by Hillman Printers (Frome) Ltd., Somerset

In fondest, everlasting memory of my grandparents,
Gertrude and Ernest Timmins.

Nothing is there to come, and nothing past,
But an eternal Now does always last.
Abraham Cowley, *Davideis*, Bk i, line 361

Contents

Foreword by Professor Roy P. Mackal 9
Acknowledgements 10

Introduction: Lost Worlds and Living Fossils – *Fiction or Fact?* 11
Geological Time Chart 14
How Dead are the Dinosaurs? – *A Reptilian Resurrection* 15
Things with Wings – *From Pterosaurs to Teratorns* 48
Monsters From the Ancient Waters – *Living Leviathans of Sea and Lake* 78
Lions With Pouches and Horses With Claws – *A Collection of Mammalian Methuselahs* 129
In Conclusion: Back to the Future? 174
Appendix: The International Society of Cryptozoology 178

Selected Bibliography 179
Index 188

Foreword

by Professor Roy P. Mackal PhD, DSc

THERE ARE a number of definitions of cryptozoology. As a practising cryptozoologist for over 30 years, I prefer the following: cryptozoology is the study and investigation of evidence for animals unexpected in time or place or in size or shape. Dr Karl Shuker has addressed the first category of animals in this definition ('animals unexpected in time'), referring to possible select species – that is, surviving animal species known only from the fossil record or which were known in the past but are now thought to be extinct.

There have been many studies and books written about so-called 'living fossils', a somewhat contradictory misnomer. None in my opinion even come close to this superb work by Dr Shuker entitled *In Search of Prehistoric Survivors*. Let me explain why this book is so outstanding. First, the exceptional scholarship which is not only comprehensive, but also scrupulously accurate, sets this book apart. Second, the analyses of data are always well balanced, compellingly reasonable and objective, without becoming boring or tedious. Last, the presentation and literary style provide a clear, understandable text even to non-professionals but is never 'written down', so that it is acceptable to scientists as well.

I always imagined that I was aware of most, if not absolutely all, available cryptozoological information, yet to my surprise and delight I found a great wealth of new data about cryptids (possible unknown animals) totally new to me as well as additional information about cryptids already familiar to me. Not since *On the Track of Unknown Animals* by Dr Bernard Heuvelmans has anyone compiled so much excellent material and integrated it so well into the corpus of cryptozoological knowledge.

The foregoing would be more than enough to establish Shuker's book as the best in recent times, yet there is more to excite the reader. Shuker has done real cryptozoology. The core cryptozoological research consists of comparing available data about a particular cryptid to all known animal groups. both living and extinct, in order to establish tentative relationships possibly leading to identification of the animal in question or at least establishing affinities. Further, an assessment must be made as to whether or not information actually is related to real unknown animals, rather than a hoax, a mistaken identification or simply wishful thinking or fabrication.

Shuker has demonstrated encyclopedic zoological knowledge, the application of which has provided a well-reasoned, compelling argument for the identity of many of the cryptids in his book. Throughout, Shuker's approach is strictly scientific without ever relying on questionable explanations. This book will undoubtedly be a great inspiration and reference for its readers.

SAN DIEGO, CALIFORNIA

Acknowledgements

I WISH TO thank most sincerely the following persons, institutions, organizations and publications for their kind interest and assistance during the preparation of this book.

Academy of Applied Science (Concord, New Hampshire); Dr Victor Albert; Matthew Bille, *Exotic Zoology* newsletter; Birmingham Public Libraries; Alan Brignall; British Library; British Museum (Natural History); G.G. Bryan; Owen Burnham; Mark Chorvinsky; Professor John L. Cloudsley-Thompson; Loren Coleman; Paul Cropper; Dami Editore s.r.l.; the late Tim Dinsdale; Jonathan and Alison Downes, *Animals and Men*; Drayton Manor Park & Zoo; Dudley Public Libraries; Hugh Evans; *Express and Star* (Wolverhampton); *Falmouth Packet*; *Fate Magazine*; Steve Fletcher; Angel Morant Fores; *Fortean Times*; Phyllis Galde; Bill Gibbons; Michael Goss; J. Richard Greenwell; Craig Harris, *Crypto Chronicle*; Bob Hay; Tony Healy; David Heppell; Rip Hepple, *Nessletter*; Dr Bernard Heuvelmans; Caroline Forcier Holloway; International Society of Cryptozoology; Professor Christine Janis; Dr Andrew Jeram; Dr E. Klengel; Professor Grover S. Krantz; Jonathan Leake; Professor Paul LeBlond; Gerard van Leusden; Library of Congress (Washington D.C.); Dr Adrian Lister; Los Angeles County Museum of Natural History; Donald W. McNamee; James I. Menzies; Dr Ralph Molnar; National Archives of Canada; News Team International; North Queensland Naturalists Club; Terry O'Neill; Sally Parsons; Michael Playfair; John Potter; Judy Preece; Dr Clayton E. Ray; Michel Raynal; Brian Regal, Tarbosaurus Studios; Bob Rickard; Dr Robert H. Rines; Dr W.D. Ian Rolfe; Mark Rothermel; Trina Sabell; Sandwell Public Libraries; Dr François de Sarre; Ron Scarlett; Steven and Frances Shipp, Midnight Books (Sidmouth, Devon); Mary D. Shuker; Paul Sieveking; G.R. Cunningham van Someren; Dora Stokes; *Strange Magazine*; Lars Thomas; the late Gertrude Timmins; United Press International; University of Birmingham; Dr Leigh Van Valen; Frances Vargo; Vorderasiatisches Museum; Jonathan Walls; Walsall Public Libraries; Wednesbury Typewriter Service; Travis Westley; Jan Williams; Wolverhampton Public Libraries; Peter Burford Wood; Susan Wood and the late Gerald L. Wood; Professor Bernd Würsig; Zoological Society of London; Professor George Zug.

I wish to acknowledge an especial debt of gratitude to my agent Mandy Little of Watson, Little Ltd, and to my editor Stuart Booth of Blandford Press at Cassell, for their abiding faith in this book; to Janet and Colin Bord and the Fortean Picture Library for their invaluable assistance in making available to me all manner of much-needed cryptozoological illustrations; to Ian Downes and Andy Mountford for their indispensable expertise in motorbike mechanics enabling me to remain mobile throughout my research travels; and to Professor Roy P. Mackal for his uplifting Foreword and his constant encouragement during this project.

The author has sought permission for the use of all illustrations known by him to be still in copyright. Any omissions brought to his attention will be rectified in future editions of this book.

Main jacket photograph: Loren Coleman, Fortean Picture Library; back jacket inset: Gerald L. Wood.

Conversion table

1 inch = 2.5 cm
1 foot = 0.3 metres
1 yard = 0.9 metres
1 mile = 1.6 km
1 acre = 0.4 hectares
1 ounce = 28.3 g
1 pound = 0.4 kg
1 ton = 1016 kg
$°F = \frac{9 \times °C}{5} + 32$

Introduction: Lost Worlds and Living Fossils –

Fiction or Fact?

Let me review the scene,
And summon from the shadowy Past
The forms that once have been.
Henry Wadsworth Longfellow,
A Gleam of Sunshine

PRIOR TO the biological revolution that accompanied the arrival of Darwin and his theory of evolution on to the scientific stage during the mid-nineteenth century, zoologists and even palaeontologists firmly believed that animal species were immutable and immortal – that all were exactly the same today as they had always been, and that extinction did not occur.

The numerous fossils that had already been unearthed ought to have constituted sufficient proof that animals evolved from primitive forms into more advanced ones, and that this evolution was necessarily accompanied by extinction (eliminating species unable to survive in the face of competition from more successful forms). However, scientists of the day explained away these inconvenient remains as the bones of antediluvian monsters – ancient creatures that perished in the Great Flood chronicled by Noah and were thus lost forever.

In stark contrast, the reality of evolution and attendant extinction is largely accepted by science today – but is often misunderstood too, rendering a certain flawed anachronistic notion all the more difficult to annihilate. The notion in question is that prehistoric creatures could not have survived undetected into the present day. Remarkably, any attempt to challenge this statement constitutes an inviolate taboo for an appreciable proportion of current zoologists – thus harking back to the discredited belief in diluvian destruction.

If there were no precedents for actual prehistoric persistence into the modern world their reluctance to countenance its likelihood could be readily understood. But the annals of contemporary zoology contain numerous instances in which creatures belonging to ancient groups hitherto believed extinct since prehistoric times, or individual species assumed to have died out long ago, have been sensationally uncovered alive and well.

Examples of such 'living fossils' that have long been known to science include: the tuatara *Sphenodon punctatus*, New Zealand's lizard-like rhynchosaur, the only surviving member of this once diverse reptilian lineage that was contemporary with the dinosaurs; the horseshoe crab *Limulus*, an antiquated aquatic arthropod practically unchanged from fossils 300 million years old, and most closely related to the long-demised eurypterids (sea scorpions); the deceptively plant-like sea lilies (crinoids), actually comprising a subclass of animals allied to starfishes, which were known only from fossils dating as far back as 600 million years until a living species (the first of many) was discovered during 1755 in deep water off the Caribbean island of Martinique; and the chambered nautiluses, a handful of species constituting the only close modern-day relatives of the famous ammonites – a subclass of molluscs with coiled shells that died out alongside the dinosaurs over 60 million years ago.

Additionally, there are a number of celebrated examples unknown to science until as recently as this century – as documented in my previous book, *The*

Lost Ark. New and Rediscovered Animals of the 20th Century (1993). The first book devoted exclusively to the major zoological arrivals and revivals of the past 90-odd years, it presents the histories of many lately revealed 'living fossils'.

The most famous, and spectacular, of these is unquestionably the coelacanth. On 22 December 1938, Marjorie Courtenay-Latimer, the curator of South Africa's East London Museum, was inspecting some freshly caught fishes at the local docks when she noticed an unusual fin sticking out from the bottom of a pile of sharks. When she succeeded in extricating the fin's recently deceased owner she found herself face to face with the most extraordinary creature she had ever seen.

Measuring 5 ft long, it was a robust slaty-blue fish whose thick plates gave it an armour-plated appearance – but far stranger than its scales were its fins. The rays of its first dorsal fin were arranged like a fan, as in the fins of most other fishes. The rays in all of its other body fins, however, were borne upon fleshy lobes, so that these fins resembled short, stumpy legs! Its tail fin was equally bizarre, terminating not in two lobes but in three, and unlike any other modern-day fish known to science.

Unable to identify this peculiar fish, Courtenay-Latimer arranged for it to be preserved and sent an annotated sketch of it to Professor J.L.B. Smith – South Africa's most eminent ichthyologist. When he saw the sketch he recognized the fish straight away, but was scarcely able to believe what he saw. Its strange features identified it unhesitatingly as a coelacanth, a member of an archaic lineage of fishes called the crossopterygians, which were previously believed to have died out alongside the dinosaurs, at least 64 million years ago!

When Smith examined the fish in the flesh, however, there was no room for doubt – it really was a hitherto unknown, modern-day species of coelacanth, and in honour of its discoverer he duly dubbed it *Latimeria chalumnae*. Since then, many other specimens of *Latimeria* have been caught, all but one (a Mozambique individual) of which were captured in the waters surrounding the Comoro Islands, near Madagascar. Perhaps the most ironic aspect of this case is that the natives of the Comoros were already so familiar with the coelacanth, which they called the *kombessa*, that they habitually utilized its scales as sandpaper, for mending punctures in bicycle tyres!

Other significant living fossils discovered during this century include a series of superficially limpet-like species of the genus *Neopilina* that first came to light during the 1950s and were found to be monoplacophorans, primitive molluscs that supposedly died out 350 million years ago. *Neoglyphea inopinata*, a nondescript crab-like animal scooped up from the South China Sea in 1908, remained un-named and unstudied until 1975, when it was sensationally identified as a glyphid – a primitive crustacean hitherto believed extinct for 50 million years.

Among the mammals, the famous okapi *Okapia johnstoni* was discovered within Zaire's Ituri Forest in 1901 and belongs to a group of short-necked forest giraffes dating back 30 million years.

The mountain possum *Burramys parvus*, a primitive marsupial, was known only from fossils at least 10,000 years old until a living specimen was unexpectedly captured in 1966. The Chacoan peccary *Catagonus wagneri*, a pig-like creature, is another species known only from fossils that was believed to have died out during the Ice Ages until found alive in Argentina in 1974.

Cephalodiscus graptolitoides, dredged up from the sea around the New Caledonian islet of Lifou in 1989, is deemed to be a living graptolite, thereby resurrecting these mysterious colonial invertebrates from 300 million years of official extinction.

Many other modern-day methuselahs are also on record; yet for the most part the zoological world stubbornly continues to close its mind to the exciting possibility that similar discoveries are still waiting to be made. It prefers instead to discount those believing in such a possibility as suffering from acute 'Lost World' syndrome – a reference to the popular novel, *The Lost World*, by Sir Arthur Conan Doyle in which scientists discover an isolated, prehistoric world inhabited by creatures from the distant past.

Needless to say, I am not for one moment suggesting that the unveiling of an entire prehistoric world is feasible in reality. However, amid the vast scientific and popular non-fiction literature are countless clues and indications – ranging from reliable eyewitness accounts to even an alleged specimen or two – that provide a thought-provoking body of evidence pointing to the undisclosed survival in disparate corners of the world of many different types of prehistoric animal.

This extraordinary situation is recognized nowadays by a small but steadily increasing association of open-minded scientists referred to as cryptozoologists (seekers of 'hidden animals'), leading to the foundation in 1982 of the International Society of Cryptozoology (ISC) – the world's first scientific body devoted to the investigation of such creatures worldwide. The goals of its members, including myself, are to dredge records of mystery beasts out of the morass of often

obscure, little-known publications in which they have lain buried for decades or longer, thus bringing them to public attention, in many cases for the first time, and to seek these animals directly in the field whenever the opportunity arises.

But if such creatures really do exist, why have we not already found them? The answer lies primarily in the nature of their habitats, which invariably embody a unique combination of ecological security for their elusive denizens, and virtual inaccessibility for western investigators (an inaccessibility that sometimes owes its success as much to bureaucratic barriers as to environmental ones!).

This can be best illustrated by considering the habitats of those living fossils already known to science. Many first came to attention as fortuitous finds present in non-specific hauls of zoological specimens dredged up from the depths of the vast oceans – which indisputably harbour numerous other surprises still awaiting disclosure. As for the remaining prehistoric survivors presently on record, these usually inhabit isolated areas little changed for thousands if not millions of years (often on account of prominent topographical features that have effectively separated off such areas from their immediate surroundings).

Ensconced within these havens of suspended time, such creatures have been sheltered from competition with more advanced species that have evolved and established themselves in other areas, or they have retreated here in the wake of such competition experienced elsewhere. Areas of this type include: treacherous mountain ranges; dense rainforests encircled by rivers, sheer-sided valleys, or other natural barriers; remote inland stretches of water long since separated from any contact with the sea and still far removed (as yet) from encroaching human civilization; as well as small uninhabited islands relatively undisturbed by westerners due to their distant location or lack of commercially viable prospects.

It should be no surprise to learn, therefore, that these are the self-same areas in which, on those infrequent occasions when intrepid western explorers and scientists have penetrated their forbidding seclusion, there have been tantalizing glimpses of what could be examples of prehistoric survivors still eluding official discovery and documentation.

As the first work devoted exclusively to this fascinating subject, this volume offers a unique introduction to undiscovered living fossils concealed amid the many 'lost worlds' across the globe – surveying a vast spectrum of anachronistic anomalies ranging from dinosaurs, pterosaurs, and plesiosaurs, to giant birds, sabre-toothed tigers, mammoths, and much more.

Having said that, and after giving the matter much thought, I have decided not to include in this book an in-depth coverage of prehistoric survivors of the man–beast variety. Human evolution is, in itself, so notoriously complex and controversial a subject that if its cryptozoological aspects were given the same level of coverage accorded here to other animal forms, its chapter would be disproportionately long. Yet a mere superficial treatment could severely undervalue many of the anthropological and evolutionary issues that are of great potential interest to the cryptozoologist. Clearly, therefore, this is a subject requiring a comprehensive, book-length treatment to itself (planned as a future companion volume to this one). In the meantime, the man–beasts are restricted here to a deliberately brief résumé, which merely outlines current theories linking them to prehistoric survival; it is *not* intended to be equivalent to the level of coverage given to other cryptozoological subjects.

In addition, I have excluded certain proposed examples of prehistoric survival that I consider far too implausible to warrant serious consideration (for example, modern-day persistence of the great American lion *Panthera leo atrox* as based merely upon sightings of beasts resembling escapee African lions and black panthers), or too vague to permit a detailed attempt at identifying their presumed prehistoric antecedents (as is New Zealand's otter-like *waitoreke*).

Instead, I have been able to devote some much-needed attention to the many notable examples of prehistoric survivors that have rarely, if ever, before received extensive documentation such as this in a cryptozoological work.

In a book of this scope, which traverses so frequently the far reaches and backwaters of zoology, an extensive bibliography listing the major (and all too often maddeningly obscure) sources utilized in its preparation is naturally essential – so that readers interested in pursuing various aspects in greater detail are able to do so without being confronted by the unenviable task of uncovering for themselves the identity of those sources. Hence a select chapter-by-chapter bibliography will be found at the end of this volume.

It is nothing if not ironic that much of traditional zoology's reluctance to give serious consideration to the prospect of prehistoric survival stems not from its incomplete knowledge of the present day's fauna but rather from its infinitely less complete knowledge of the past's. Fortunately, however, a sufficient number of significant new species of 'living fossil' have already been discovered during this century to spotlight very

effectively science's myopic attitude in relation to such matters.

These zoological old-timers are instrumental, therefore, in helping to reshape science's ideas regarding not only our planet's contemporary life forms but also its earlier ones and, as a natural consequence (we can but hope!), its attitude towards prehistoric survival – a trend that will gather even more momentum if any of the mystery beasts documented in the following chapters are successfully unveiled in the future. After all, as Gerald White Johnson once wrote:

> Nothing changes more constantly than the past; for the past that influences our lives does not consist of what actually happened, but of what men believe happened.

This is just as true for cryptozoology as for any other field of human interest.

Geological Time Chart

ERA	PERIOD	EPOCH	MILLIONS OF YEARS AGO
CENOZOIC	QUATERNARY	HOLOCENE	0.01
		PLEISTOCENE	2
	TERTIARY	PLIOCENE	5
		MIOCENE	25
		OLIGOCENE	38
		EOCENE	55
		PALAEOCENE	64
MESOZOIC	CRETACEOUS		144
	JURASSIC		210
	TRIASSIC		245
PALAEOZOIC	PERMIAN		286
	CARBONIFEROUS		360
	DEVONIAN		408
	SILURIAN		438
	ORDOVICIAN		505
	CAMBRIAN		590
PROTEROZOIC EON	PRE-CAMBRIAN		2500
ARCHAEAN EON			4600

How Dead are the Dinosaurs?

A Reptilian Resurrection

> I can appreciate the opinion of the great majority of zoologists and paleontologists who believe that the survival of any dinosaur into the present time is improbable. I cannot agree that the idea is impossible, which is what makes the whole question so interesting.
>
> Professor Roy P. Mackal, *A Living Dinosaur? In Search of Mokele-Mbembe*

> There's places in Africa where you get visions of primeval force . . . in Africa the Past has hardly stopped breathing.
>
> 'Trader Horn' [Alfred Aloysius Smith], *Trader Horn*

ACCORDING TO traditional texts, dinosaurs died out over 64 million years ago – didn't they?

The reason (or reasons) for the all-encompassing, all-inclusive extinction of the dinosaurs is one of zoology's greatest unsolved mysteries. Out of the many thousands of species that evolved during their 160-million-year reign on earth, not a single representative survived beyond the close of the Cretaceous period. Why? Since the true nature of dinosaur fossils was first recognized back in the early 1800s, almost as many theories concerning their extinction as there were once dinosaurs themselves have been proposed, discussed – and ultimately rejected because none has so far provided a convincing explanation for the extraordinary selectivity that effected these exceedingly diverse creatures' demise while permitting various other creatures of reptilian descent to persist right up to the present day.

Why should every single species of dinosaur – large, small, aquatic, terrestrial, herbivorous, carnivorous, active, sluggish, warm-blooded, cold-blooded, solitary, social – die out, while other contemporary vertebrates such as the crocodiles, lizards, snakes, turtles, birds, and mammals survived?

Perhaps there is no answer – perhaps the riddle is insoluble for the simple reason that the scenario portrayed by it never took place. 'When you have eliminated the impossible, whatever remains, *however improbable*, must be the truth' is an oft-quoted maxim of Sherlock Holmes, Sir Arthur Conan Doyle's famous detective. Holmes, of course, was fictional, but his principle of rational analysis is perfectly sound, and when applied to the case of the missing dinosaurs it provides a highly thought-provoking outcome. If, as would appear to be true, the concept of the dinosaurs' bewilderingly exclusive disappearance is so bizarre that it is simply not tenable, then it is time to give serious consideration to the outwardly improbable yet none the less valid alternative – that not all of the dinosaurs did die out, that in reality a few species persisted beyond the Cretaceous, and are represented today by living, modern-day descendants concealed within certain remote regions of the world, extraordinary species familiar to the native peoples sharing their reclusive domain but currently undiscovered by science.

What is so fascinating about this dramatic prospect is that many reports of unidentified creatures remarkably dinosaurian in alleged appearance have indeed emerged from such areas, particularly in Africa, and have originated not only from so-called 'primitive' tribes (who none the less generally know their wildlife far more intimately than do many scientists) but also from western explorers, settlers, and even – on a surprising number of occasions – from scientists themselves.

And not just dinosaurs – also under consideration here are a number of non-dinosaurian members of prehistory's terrestrial and swamp-dwelling herpetological fauna (ranging from monstrous monitors to some very sizeable salamanders) that may have lingered long beyond their extinction dates.

The Congolese *mokele-mbembe* – illusive dragon, or elusive dinosaur?

At around 7 o'clock one clear, sunny morning in the 1960s, a 17-year-old African hunter called Nicolas Mondongo was standing on the bank of the Likouala-aux-Herbes River upstream of Mokengi, a village in the People's Republic of the Congo (formerly the French Congo). Without warning, the waters parted and a huge animal surfaced – beginning with an extremely long, slender neck and well-defined head, followed by a very bulky, elephantine body rising up on four massive legs, and finally revealing a lengthy, tapering tail.

For a full three minutes, this extraordinary animal remained above the surface of the water, which had cascaded down from its shoulders like a miniature cataract during its unannounced emergence. Standing less than 15 yards away, terror-stricken yet mesmerized by the mighty water beast's awesome presence, Mondongo estimated its total length to be around 30 ft – of which about 6 ft were accounted for by its head and neck, and a similar length for its tail. Then suddenly, just as abruptly as it had appeared, the creature submerged again, and within a few moments the last ripples on the water marking its disappearance were gone, leaving Mondongo with only the memory of his astonishing encounter.

A scene, perhaps, from Steven Spielberg's sci-fi blockbuster, *Jurassic Park*? Not according to the native Africans, the pygmies, and the French missionaries inhabiting the Congo's humid, inhospitable Likouala swamplands, for whom this astonishing animal is a vehemently acknowledged reality. They call it the *mokele-mbembe*, and even though its very existence has yet to be officially verified by science it has incited an ever-increasing degree of western excitement in recent years – because if native eyewitness descriptions of it are accurate, the reclusive *mokele-mbembe* is almost certainly a living dinosaur.

The possibility that central Africa might one day host a sensational reptilian resurrection first received detailed consideration from French cryptozoologist Dr Bernard Heuvelmans. His analyses of this region's varied catalogue of dinosaurian mystery beasts were published in *On the Track of Unknown Animals* (1958) and *Les Derniers Dragons d'Afrique* (1978), yielding inspiration and information to all manner of modern-day dinosaur quests. But if the *mokele-mbembe* really is a living dinosaur, what type could it be?

An elephant-sized sauropod, akin to prehistory's *Diplodocus* and *Apatosaurus* (formerly *Brontosaurus*); that, at least, is the opinion of Professor Roy P. Mackal, an eminent, recently retired biologist from the University of Chicago, who is the world's leading expert on this elusive entity from central West Africa, and is also Vice-President of the International Society of Cryptozoology (ISC). After conducting extensive bibliographical research that uncovered many hitherto unpublicized sightings (including the discovery by some French missionaries of gigantic clawed tracks, each about 3 ft in circumference and 7–8 ft apart, in a Congolese forest southwest of the Likouala sometime prior to 1776), Mackal led two expeditions to the Congo, seeking evidence to confirm the *mokele-mbembe*'s existence.

The Mackal expeditions

On his first expedition, a month-long foray during February to March 1980, Professor Mackal was accompanied by James H. Powell, a herpetologist from Texas. This trip introduced them to northern Congo's Likouala region, a vast and virtually uncharted, unexplored wilderness of environmentally hostile swamps – 55,000 square miles of virgin territory where an entire herd of dinosaurs would be no more conspicuous than a swarm of gnats.

If dinosaurs could exist unknown to science anywhere in the world, the Likouala is where they would be, and the team's enquiries, taking them south from Impfondo to the village of Epéna, fuelled their hopes by yielding first-hand accounts of *mokele-mbembe* sightings gathered from more than 30 reliable eyewitnesses among the native Congolese people and pygmies. In particular, they were informed by one of the Kabonga pygmies from a village called Minganga, north-west of Epéna, that these animals had certainly been seen in a river that they called the Tebeke – which appeared to be their local name for the northern stretch of the Bai River, to the west of Epéna.

Although Mackal and Powell did not obtain any personal sightings of their quarry, Mackal was greatly heartened by the native accounts that they had collected. Accordingly, in late October 1981 he returned to the Congo to lead a second, more detailed exploration of the Likouala. His team included J. Richard Greenwell (Secretary of the ISC), Congolese biologist Dr Marcellin Agnagna, American Baptist missionary Pastor Eugene Thomas (who had lived in the Likouala region with his wife, Sandy, for 26 years), some Congolese army personnel, and a party of pygmies as helpers. This time, Mackal decided to focus his attention upon the northern Bai River and a large shallow lake nearby called Tele, where *mokele-mbembes* had again been seen on many occasions according to local testimony.

After flying north of Epéna to Impfondo, the site of Pastor Thomas's mission, the team set out in native dugouts southwards along the Ubangi River, from which they crossed via a weed-choked canal into the westerly sited Tanga River, taking them in a south-westerly direction past Epéna on the Likouala-aux-Herbes. After reaching the confluence of this river with the southernmost portion of the Bai River, they established a base at Kinami on the Bai, and travelled to several nearby villages, questioning the natives regarding *mokele-mbembes*.

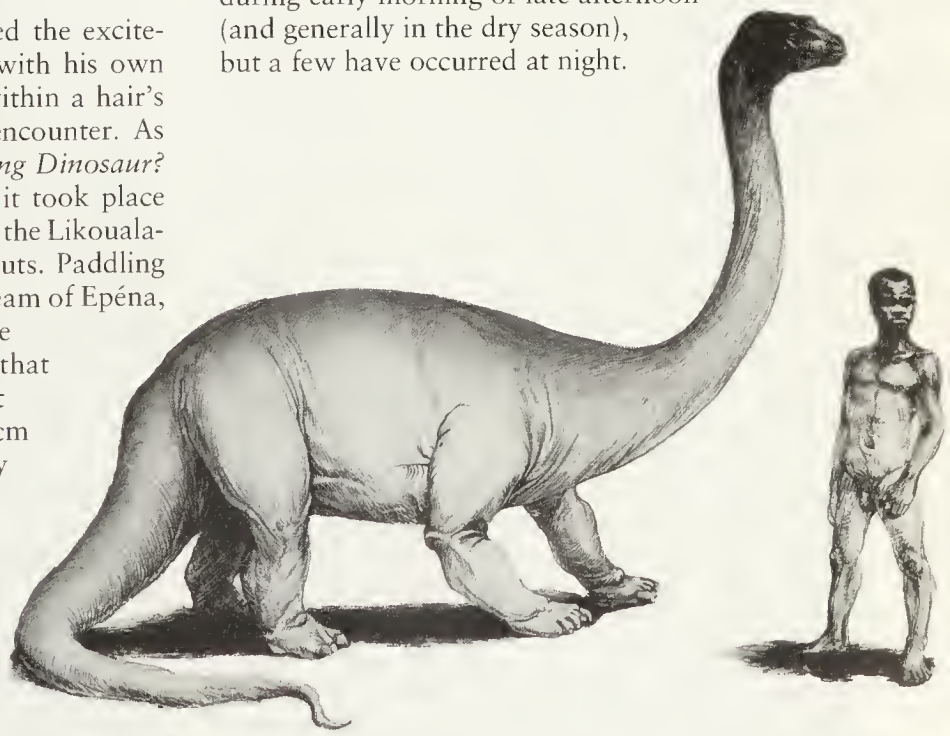
Although the team acquired many additional eyewitness accounts, they learnt to their great disappointment that the Tebeke River as referred to by the Kabonga pygmies during Mackal's first expedition was *not* the northern Bai after all. Instead, it was a lake, to the west of the Bai, which could only be reached from their present position by a near-impossible overland trek that would require several days of sustained travel through very inhospitable, swampy terrain. Moreover, an equally forbidding overland trek to the east faced them if they decided to journey from the Bai to Lake Tele. Hence the team reluctantly abandoned their hopes of reaching either of these destinations, and after completing their studies around Kinami they retraced their journey back to Impfondo, then flew home to the USA in December 1981.

Sadly, Mackal was once again denied the excitement of observing a *mokele-mbembe* with his own eyes – but on one occasion he came within a hair's breadth of experiencing a very close encounter. As revealed in his fascinating book *A Living Dinosaur? In Search of Mokele-Mbembe* (1987), it took place while the expedition was travelling along the Likouala-aux-Herbes in a couple of native dugouts. Paddling around a sharp curve in the river, upstream of Epéna, their eyes scanned the river bank, whose shadow lay over the water inshore. 'At that very moment,' recalled Mackal, 'a great "plop" sound and wave cresting at 25 cm [10 in] washed over the dugout, directly from the bank of the shadowed area. The pygmies screamed hysterically, *"Mokele-mbembe, Mokele-mbembe"*.' Mackal at once urged them to turn back in pursuit of whatever unseen creature had been responsible for this enormous disturbance, but his African assistants were most reluctant to do so.

Notwithstanding their protestations, however, Mackal and party did change course, but by the time that the dugouts had reached the spot where the creature had submerged, all signs of its presence had vanished. Crocodiles do not create waves of this nature when they dive, elephants cannot submerge entirely, and hippos (which can) do not occur in the Likouala swamps – all of which lends considerable credibility to the pygmies' ready identification of the missing monster as a bona fide *mokele-mbembe*.

Compensating for his disappointment regarding that incident during his searches in the Likouala swamps, Mackal once again succeeded in gathering an impressive dossier of independent eyewitness reports (including Nicolas Mondongo's) and background details regarding their mysterious occupant. These generally corresponded closely with one another as well as with those from his previous expedition, and can be summarized as follows.

According to local testimony and traditional beliefs, the *mokele-mbembe* is a massive and elusive but unequivocally real water dragon, reddish-brown in colour, that inhabits deep pools in the banks of the Likouala's forested waterways. It is rarely observed, spending much of its time submerged, with only its head and neck spasmodically breaking the surface in order to feed upon bankside vegetation; but when it *is* seen, its appearance corresponds with Mondongo's sighting as described previously. Most sightings occur during early morning or late afternoon (and generally in the dry season), but a few have occurred at night.



Representation of the mokele-mbembe, *based upon eyewitness descriptions. (Drawn by David Miller, under the direction of Professor Roy P. Mackal)*

In spite of its size, the *mokele-mbembe* is extremely quiet, not giving voice to any sound, and is exclusively herbivorous, its principal food comprising an indigenous fruit known locally as the *malombo*, which Mackal and Powell revealed to be a species of *Landolphia* gourd (confirming a prediction made earlier by Heuvelmans). Yet despite its vegetarian lifestyle and generally placid temperament, the *mokele-mbembe* can become very aggressive if provoked, capsizing dugouts by rising up underneath them, and killing (but not devouring) their hapless occupants with powerful thrashes of its long sturdy tail.

Of particular significance (as will be seen later) is the claim by native eyewitnesses that on those rare occasions when the *mokele-mbembe* ventures out of the swamps on to land, it leaves behind very large and distinctive three-clawed footprints – footprints that are unlike those of any other modern-day animal.

During his expeditions, Mackal and his fellow team members were very careful not to influence eyewitnesses' descriptions when questioning them concerning the *mokele-mbembe*. Their descriptions were verbal or from drawings traced in the sand – and only *after* these had been recorded were picture books of animals shown to them. Of the numerous detailed descriptions of *mokele-mbembes* by first-hand observers, all readily recalled a small (i.e. elephant-sized) sauropod dinosaur, and when these eyewitnesses were shown pictures of living and extinct animals the pictures of sauropods were the ones selected by them as being most similar in form to the *mokele-mbembe*. Moreover, the eyewitnesses were from several different ethnic cultures, religions, and geographical locations.

Early mokele-mbembe *reports*

Mackal's expeditions certainly initiated modern-day public interest in the *mokele-mbembe* (later exploited by Hollywood in 1985 with the release of the successful Touchstone film *Baby: Secret of the Lost Legend*, concerning the discovery by a palaeontologist of a baby *mokele-mbembe*). However, there are reports by westerners specifically mentioning this creature that date back at least as far as 1913. This was the year that saw the commencement of the Likuala-Kongo Expedition, a German exploration of northern Congo (then part of Cameroon) led by Captain Freiherr von Stein zu Lausnitz, and scheduled to last for two years. Due to World War I, however, it was never completed, and the official findings were not published, but certain sections were obtained by cryptozoologist Willy Ley, who discovered that during their travels the team had collected native reports describing a very large water beast known to the locals in the area of the lower Ubangi, Sanga, and Ikelemba Rivers as the *mokele-mbembe*. Their description of its appearance and lifestyle was entirely consistent with the version that Mackal would hear again and again during his own expeditions almost 70 years later – except for one feature.

According to Stein zu Lausnitz, 'It is said to have a long and very flexible neck and only one tooth but a very long one; some say that it is a horn'. When Mackal queried the natives regarding a horn, they were insistent that the *mokele-mbembe* did not have one. Instead, this was possessed by an equally mysterious but entirely separate animal, the *emela-ntouka* (see p. 28).

Mackal believes that Stein zu Lausnitz's error stemmed from the natives' confusing tendency to use '*mokele-mbembe*' not only as a specific name for the sauropod-like mystery beast, but also as a collective term encompassing this animal and the genuinely horned *emela-ntouka*. This may well be true, but, as will be revealed a little later, there is evidence to suggest that certain long-necked *mokele-mbembe*-type beasts do indeed possess a horn. Another version of the name appears to penetrate beyond the confines of the Congo northward as far as southern Cameroon, because in 1938 a German magistrate called Dr Leo von Boxberger, who had spent many years in this region, noted that the natives there firmly believed in the existence of a gigantic long-necked water reptile that they called the *mbokale-muembe*.

Mbilintu, isiqukumadevu, irizima, badigui, amali, n'yamala

There are on file many western accounts of unidentified beasts elsewhere in Africa that have totally different names, yet which are all seemingly akin to the Congo's *mokele-mbembe*.

Someone who spent much of his life in the Intelligence and Administrative Services of East Africa and as a local magistrate is hardly the type of person given to wild imagination or unreliable testimony – which is why we should give serious consideration to the series of articles by Captain William Hichens published during the 1920s and 1930s that discussed the possible existence in Africa of several spectacular species of animal still undiscovered by science. Among those that he documented was a water beast called the *mbilintu*, which has been widely reported, from Zambia's Lake Bangweulu and Lake Mweru (bordering Zambia and Zaire), to the swamplands of Zaire itself (formerly the Belgian Congo), and Lake Tanganyika (bordering Zaire and Tanzania).

According to Hichens, descriptions of this creature vary considerably, but can be split into two morphologically distinct types. These evidently represent two wholly separate species that inhabit the same areas and which have become confused with one another in native traditions and recollection. Paralleling the Likouala situation noted earlier, one is a large rhino-like beast (verbally distinguished in certain localities, such as Zambia's Lake Bangweulu, as the *chipekwe*, p. 28), whereas the other is clearly allied to the *mokele-mbembe*, and is likened to a gigantic lizard with a neck like a giraffe, elephant-like legs, a small snake-like head, and a 30-ft-long tail (no doubt a native exaggeration).

One of the *mbilintu*'s earliest western investigators was the renowned animal collector Carl Hagenbeck. In his book *Beasts and Men* (1909), he recalled that two wholly independent sources (an English hunter, and Hans Schomburgk, one of Hagenbeck's own collectors) had supplied him with details of a gigantic reptilian beast, half dragon and half elephant, inhabiting the interior of Rhodesia (later split into Zambia and Zimbabwe). 'From what I have heard of the animal,' concluded Hagenbeck, 'it seems to me that it can only be some kind of dinosaur, seemingly akin to the brontosaurus.' So convinced was he concerning its existence that he had dispatched a formal expedition in search of hard evidence to confirm this, but repeated onslaughts by savage tribes, virulent debilitating fever and the unimaginably vast expanses of the near-impenetrable marshland and jungle effectively conspired to frustrate all attempts to spy their cryptic quarry.

Slightly more successful was Lewanika, king of Barotseland (a north-western district of what is now Zambia), who had always displayed a great interest in his kingdom's fauna. One day prior to the 1920s, three of his subjects arrived at his court-house in great excitement, to inform him that they had just seen one of these great creatures, which they referred to as the *isiququmadevu*, lying on the edge of a marsh. Their description of it perfectly matched that of the *mokele-mbembe* – taller than a man, with a huge body, a long neck with a snake-like head, and sturdy legs. Once the creature had caught sight of the men, however, it had rapidly retreated, submerging into deep water.

Undaunted, Lewanika lost no time in travelling to the spot where this encounter had taken place, and although the creature did not reappear for him, he could plainly see where it had been – revealed by the presence of a large area of flattened reeds, and a broad path with water flowing into it that led to the water's edge. The Barotse king was so impressed that he sent an official report of the incident and his observations to Colonel Hardinge, the British Resident, in which he recorded that the channel made by the animal's body was 'as large as a full-sized wagon [roughly 4½ ft wide] from which the wheels had been removed'.

More successful still was Alan Brignall, to whom I am greatly indebted for kindly permitting me to document here his hitherto-unpublished encounter with what would appear to be a *mbilintu* of the long-necked persuasion. During the early 1950s, Brignall was working in Kiture, Zambia (then Northern Rhodesia), and his sighting took place one afternoon while taking a few days' holiday in the bush with some colleagues in May 1954. He had been fishing from the shore of Lake Bangweulu, and could see two tiny islands in the lake. Covered with small trees and shrubs, they were situated about 25 yards from the shore where he was standing, and were surrounded by reeds.

Suddenly, looking up from his fishing and across at the islands, Brignall received a considerable shock, because something that seemed at first to be a huge snake had risen up out of the water on the shore side of the islands. However, it did not resemble any type of snake that he'd seen before. A small head was raised roughly 4½ ft above the water surface on a long vertical neck, approximately 1 ft wide, seemingly scaleless, and uniformly grey in colour. The neck remained stationary, but the head, which possessed a distinct brow, blunt nose, and visible jawline, swivelled from side to side as if seeking something. The mouth remained closed, and Brignall was unable to discern any nose or ears. Just behind the neck was a small hump, the same colour as the neck, and which Brignall believed to be a portion of the creature's body rather than merely a fin.

Brignall recalls that, after observing these details for a few seconds, he either attempted to signal to a friend nearby or he put down his fishing rod to reach for his camera. Whichever action it was that he took, it immediately attracted the creature's attention, because it instantly sank down, submerging vertically until it was totally hidden beneath the water. Brignall did not see it again, and is convinced that the creature was not a lizard, crocodile, or turtle, but rather something thought to be extinct.

According to a letter published in the *Neue Mannheimer Zeitung* (6 January 1934), a dinosaur-like beast resembling an island floating on Lake Tanganyika and leaving three-clawed prints on its shore had been sighted from a distance by several

ships around 1928, but as soon as any attempted to draw nearer, it immediately sank beneath the water. The prints that had been observed were larger than those of an elephant, and revealed the presence of a thick tail too. Its most notable investigator was the brother of Sir Edward Grey, but despite spending many years researching the creature he never solved its mystery.

Zaire's version of this beast is the *irizima*, and in a by now familiar tradition the natives apply its name to two different animals – the mysterious horned creature known elsewhere as the *emela-ntouka* or *chipekwe*, and the sauropod-like *mokele-mbembe* beast. According to a description of the latter creature recorded by Captain Hichens, it is 'a marsh monster with a hippo's legs, an elephant's trunk, a lizard's head, and an aardvark's tail', and inhabits Lake Edward. In 1927, a big-game hunting expedition led by Lieutenant-Colonel H.F. Fenn hoped to uncover the identity of this aquatic anomaly, but did not succeed in doing so.

Although Mackal's enquiries convincingly ascertained that the horn sometimes ascribed to the *mokele- mbe-mbe* was actually that of the distinct (albeit equally undiscovered) swamp-dweller known as the *emela-ntouka*, there is at least one detailed account on record of a genuinely horned *mokele-mbembe*-type beast. In November 1979, mystery beast investigator Philip Averbuck was following up reports of creatures resembling the *mokele-mbembe* in Cameroon, when he learnt that two such beasts had been sighted by air security officer A.S. Arrey at Kumba during 1948–9, when he was a child.

Arrey had been swimming with some friends in Lake Barombi Mbo, in which some British soldiers were also swimming, when the water at the lake's centre began to boil. Everyone immediately swam to shore, and after clambering out they looked back and saw to their astonishment that a long neck had emerged above the water's surface, bearing a small slender head at its tip. A few minutes later, a second, larger neck and head surfaced nearby, about 200 yards from their human observers. At this point, the soldiers turned and fled, but the others remained, fascinated by the extraordinary spectacle.

The neck of the larger creature, which Arrey assumed to be the male, was slightly curved, extended 12–15 ft above the water surface, and was covered in smooth snake-like scales. Its head was about 2 ft long, and bore at the back a spiny horn or cap-like structure roughly 8 in long, which projected downwards. Interestingly, the smaller, 'female' creature was hornless. The two remained visible for about an hour, after which the female sank back down beneath the water, followed a few minutes later by the male. According to local tradition, this animal never leaves the water, and only surfaces very infrequently. If it is true that only one sex possesses a horn (thus being a very notable example of sexual dimorphism), it would provide an additional explanation for why some *mokele-mbembe* reports gathered by Mackal referred to horned beasts and others to hornless ones.

Recent palaeontological research has confirmed that a horned or spiny sauropod would not be unprecedented. In the journal *Geology* (December, 1992), dinosaur researcher Dr Stephen Czerkas from Monticello, Utah, revealed that the skin of a currently unnamed species of *Diplodocus*-related sauropod from Wyoming was patterned with spines, each just over 1 in across, borne upon its tail and probably extending along its backbone too. Most of the spines were small and conical, but the larger ones were flattened and up to 9 in long.

North of the two Congos and east of Cameroon lies the Central African Republic – another country reputedly harbouring *mokele-mbembe* counterparts. Here, such beasts are known variously as the *badigui*, *diba*, *guaneru*, *ngakula-ngu*, and *songo*. They inhabit rivers and lakes where they remain with their bodies completely submerged, only very occasionally coming out on to land. Instead, they raise their long slender necks far up above the water and browse upon the branches of lakeside trees like reptilian giraffes. Their heads are flattened and somewhat larger than those of pythons, their necks are smooth and patterned with snake-like markings, lighter upon their under surface than upon their upper surface.

Evidence for surviving sauropods can come to light in the most unexpected ways and places. In the 1960s, a leading jewel designer called Emanuel Staub was commissioned by the University of Pennsylvania's University Museum to produce replicas of a series of small gold weights obtained in Ghana. Most of these were in the form of animals, every one different, and served as specific logos for the Ashanti gold dealers there – each dealer thus having his own, unique trademark. So well crafted were they that the animals that they depicted could be instantly identified by zoologists – all but one, that is, which could not be satisfactorily reconciled with any known animal, until Staub saw it. A founder member of the American-based Society for the Investigation of The Unexplained (SITU), which has always been keenly interested in cryptozoological matters, Staub was astonished when he saw the mystifying artefact, because it seemed to bear a striking resemblance to a dinosaur!

In January 1970, SITU's journal, *Pursuit*, documented this enigmatic model (erroneously giving its origin as Dahomey – now Benin), and attempted to identify its dinosaurian characteristics. Unfortunately, however, the model was photographed resting on its hind legs as if the beast in question were bipedal – an inappropriate representation, bearing in mind that all four legs of the model were of the same length and that the species it depicted was quite clearly quadrupedal. Coupling this with the creature's notably lengthy neck, the report's likening of the model to the bipedal dinosaur *Iguanodon* was very unconvincing.

If, conversely, the model is stood on all four legs, a radical transformation occurs, from an inaccurate rendition of an *Iguanodon* to an extraordinarily precise likeness of a sauropod. The squat, elephantine body, the four sturdy legs of equal length, the long tail, the elongate neck curving upwards – all are faithfully reproduced in this remarkable artefact. As native gold dealers in Ghana are hardly likely to have expertise in palaeontological reconstruction of long-extinct animals, we must assume that this artefact, just like all of the others, was modelled upon a real, living animal indigenous to this region – in short, Ghana must harbour a creature similar to the *mokele-mbembe*.

Indeed, the only noticeable difference between Congolese descriptions of the *mokele-mbembe* and the creature represented by the Ashanti gold artefact is that the latter's head is somewhat larger in proportion to the rest of its body. During his various animal collecting trips to West Africa, however, cryptozoologist Ivan T. Sanderson obtained reports of *mokele-mbembe*-type creatures with large heads – substantiating the accuracy of the artefact, and indicating that West Africa's representatives of the surviving sauropod clan may actually comprise a separate species from their Central and East African counterparts.

The late 1960s and early 1970s were a fruitful period for controversial dinosaur artefacts in Africa.

Ashanti gold weight recalling a sauropod dinosaur: inspired by the mokele-mbembe? *(Dr Bernard Heuvelmans)*

Just a month before *Pursuit*'s account of the Ashanti artefact was published, newspapers worldwide were carrying reports of some bewildering cave paintings discovered in the Gorozomzi Hills, 25 miles from Harare (then Salisbury), capital of what is now Zimbabwe. They had been painted by bushmen who had inhabited the area from 1500 BC to about 200 years ago, and who always based their work upon real-life animals rather than imaginary ones. One of the depictions was particularly astounding, because it portrayed a creature remarkably similar to a sauropod dinosaur. Surrounded by readily identifiable pictures of familiar species such as the African elephant, giraffe, and hippopotamus, the anachronistic anomaly had been drawn extending its long neck up out of a swamp.

Nor is this the first time that cave paintings of creatures reminiscent of dinosaurs have been discovered. Three long-necked, long-tailed quadrupedal beasts that certainly seem to be something other than crocodiles (their 'official' identity) appear in a painting found in a cave at Nachikufu in Zambia (reproduced in Professor Mackal's book, *A Living Dinosaur?*).

In his eponymous book, African adventurer Trader Horn (real name Alfred Aloysius Smith) claimed that he had chiselled from some rocks in Cameroon a painting of a swamp-dwelling beast called the *amali* or *jago-nini*, and had given it to President Ulysses Grant of the United States. Elsewhere in his book, Horn refers briefly to the footprints left behind by the *amali* – 'about the size of a good frying-pan in circumference and three claws instead of five'. This compares well with Congolese descriptions of the *mokele-mbembe*'s spoor.

The similarity of their names and lifestyle makes it plausible that the *amali* of Cameroon is one and the same species as the *n'yamala* of Gabon – a small country south of Cameroon and west of the People's Republic of the Congo. It was here that James Powell came to study crocodiles in 1976 and first learnt of the mysterious *n'yamala*, and it was his continuing investigations of this creature in 1979 that stimulated Mackal to combine forces with him in 1980 to search for its Congolese look-alike, the *mokele-mbembe*.

During his studies, Powell had been showing one of the witch doctors of the Fang tribe of Bantus a number of pictures of animals in various books, in order to learn which species frequented their territory, and while flicking through the pages he came to a picture of a *Diplodocus*. To his amazement, the witch doctor not only stated that such a creature existed in Gabon, but went on to disclose that he had in fact seen one in 1946!

Dwelling only within the deepest lakes and rarely observed, but none the less a real animal, Powell's informant called it the *n'yamala*, and also identified as the *n'yamala* a picture of a plesiosaur – a long-necked aquatic reptile that officially died out alongside the dinosaurs, and whose body and long slender neck superficially resemble those of a sauropod. During the course of his crocodile researches, Powell took the opportunity to question Gabonese natives from several different tribes and cultural backgrounds and obtained the same result every time; pictures of sauropods and plesiosaurs were consistently identified as the *n'yamala*.

Convincing him of their veracity was the fact that whereas they were adept at identifying from pictures all of the creatures that Powell already knew to be native to the area, they were equally honest in admitting that they did not recognize the animals if he showed them pictures of creatures totally foreign to the region, such as camels and bears. Consequently, Powell concluded from his enquiries that the Gabonese natives genuinely knew of a creature inhabiting their country that bore a close resemblance to a living dinosaur.

Monster hoaxes

Inevitably, a subject with as much potential for attracting media attention as the discovery of a living dinosaur has not avoided the slings and arrows of outrageous hoaxes and sensationalized documentation. During the early 1920s, for example, newspapers all over the world vied with one another to print the most lurid accounts of a thoroughly ludicrous dinosaur hunt that had begun in 1919 when a railway construction supervisor called L. Lepage allegedly encountered in the Belgian Congo a 24-ft-long dinosaur with tusk-like horns and a short horn above its nostrils. Inexplicably termed a brontosaurus by the press, this triceratopsian terror inspired varied searches and stories, including claims that a Belgian prospector called Gapelle had attempted to shoot a similar Congolese monster.

Even today, versions of these incidents still appear in cryptozoological publications, yet they have no foundation in reality – no more, in fact, than their two protagonists. As avid wordsmiths will have already spotted, 'L. Lepage' and 'Gapelle' are simple anagrams of one another. The 'great brontosaurus hunt', as it was dubbed by the media, was merely a great hoax.

A more recent spoof, but this time of the deliberately humorous, harmless variety, occurred in 1989 when the English newspaper *Today* published an

exclusive report describing the public debut at London Zoo of 'Pizza', a living brontosaur from Guinea. The report featured a somewhat blurry photo – but that did not prevent readers from readily seeing through this charade. After all, they had only to look at the date of the newspaper, 1 April!

'Operation Congo' and other recent mokele-mbembe *expeditions*

In September 1981, an expedition led by Californian consulting engineer Herman Regusters travelled to Lake Tele, and upon their return in December, Regusters announced that he and his wife Kia had not only seen a *mokele-mbembe* but had also obtained photographs of it. When developed, however, these potentially invaluable pictures were found to be greatly under-exposed, containing little or no detail, so it was impossible to determine whether they had indeed captured the image of their dinosaurian debutante. Recordings of a loud bellowing sound believed to be that of a *mokele-mbembe* were also obtained (yet according to Mackal's investigations, this animal is generally silent). A second Regusters expedition was planned for April 1985, but never took place. Regusters had initially agreed to participate in Mackal's second expedition, but withdrew during the planning stages and led his own instead.

In spring 1983, the first *mokele-mbembe* search by Congolese scientists took place, when Lake Tele was visited by a team from the Congo's Ministry of Water and Forests, led by zoologist Dr Marcellin Agnagna from the Parc de Zoologie. Spanning April and May, it returned to Brazzaville with news that Agnagna and two local helpers from a village called Boha sited near the lake had spied one of these beasts on 1 May. According to Agnagna, he had been filming monkeys in a lakeside forest with a movie camera when one of the villagers called to him in great excitement to come to the lake. When he arrived, he looked across it to where the villager was pointing and, to obtain a better view, unimpeded by shoreline vegetation, he strode into the water. It was then that he allegedly perceived the back and neck of a huge animal, visible above the surface, and about 700–900 ft away – and which turned its head as if seeking the source of the noise made by Agnagna as he approached.

Raising his camera straight away, Agnagna began filming, but when he was unable to see anything through the viewfinder he realized to his horror that his camera was on the 'macro' setting. By the time he had switched to the correct setting, his film had run out! Nevertheless, making the most of a very maddening situation, Agnagna was able to obtain a very detailed view of the creature by observing it through his camera's telephoto lens, watching it turn its head and neck as it looked slowly from side to side. Its head was very small, reddish in colour, with a pair of oval, crocodile-like eyes and a slender protracted muzzle (emphasized in a sketch drawn later by Agnagna), and was borne upon an elongate neck that was raised about 3 ft above the water and was brown at the upper end, black at the base. The long hump that surfaced just behind the neck was also black.

As Agnagna and two of the villagers waded towards it, the creature submerged, but soon afterwards its neck re-emerged, and stayed above the surface for 20 minutes before disappearing again, this time for good. During his observations, Agnagna attempted to take photos of the creature using a small 35 mm camera, but the resulting pictures were not distinct enough for positive identification. In his opinion, the animal was certainly reptilian, rather than mammalian or avian, but was not a crocodile, python, or soft-shelled freshwater turtle – the only large reptiles known to frequent this locality. Instead, he considered it to be most similar in appearance to a sauropod dinosaur.

Britain's contribution to this long-running pursuit of the prehistoric were two expeditions featuring Scottish explorer Bill Gibbons. The first, called Operation Congo, was conducted during spring 1986, and was in reality a joint Anglo–Congolese venture. Its British members comprised Gibbons, biologist Mark Rothermel, Territorial Army sergeant Joe Della-Porta acting as medic, and teacher Jonathan Walls as French interpreter. The Congolese contingent consisted of Agnagna and his assistant D'jose D'jonnie. Sadly, the expedition's progress was hampered from the start by bureaucratic problems. As a result, it was three months from the four Britons' arrival in Brazzaville on 30 December 1985 before Operation Congo reached Epéna, the starting-point of its quest for *mokele-mbembes*.

The team travelled southwards down the Likouala-aux-Herbes in dugout canoes to the village of Dzeke, and thence to a second, much more remote village called Mbouekou. Following their return to Dzeke, the Britons were taken by a retired elephant hunter called Emmanuel Moungoumela to a wooded area near the river where he claimed to have found a *mokele-mbembe* trail in 1982. Its footprints, a series of round depressions, of 12 in diameter, had been well preserved in the earth, and had also been spied by the second Mackal expedition. There was also a flattening of the tall river grass (to a height of 4½ ft)

as if thrust aside by a heavy tail. The trail led into the river – but Moungoumela had been unable to discover any further tracks leading out of it again. Thus he considered that elephants, the only scientifically recognized species in the area with comparably sized tracks, had not produced these.

The team's next destination was just to the north of Dzeke, the village of Boha. Its inhabitants claim ownership of Lake Tele – the principal focus of Operation Congo's attention – and after obtaining the services of some native porters here the expedition progressed through swampy terrain to the lake itself. During the three-day journey, their Boha guides permitted Rothermel and Della-Porta to spend a full day on the shores of three small sacred lakes never before visited by westerners but where *mokele-mbembes* allegedly live. Although a wide variety of fauna was spied here, no evidence for the presence of *mokele-mbembes* was obtained. The team was informed by the Boha that it is these small bodies of water which are the homes of the *mokele-mbembes*, not Lake Tele itself – the creatures supposedly use this merely as a source of food and as a place of transit through which they pass when travelling from one area of the forest to another.

The team spent five days at Lake Tele, during which time they took the opportunity to examine three lobes of water stretching into the forest from the lake and which are reputedly utilized as routes into the lake by *mokele-mbembes* moving from their browsing areas in the swamps. The Boha guides were very fearful of these lobes, but no evidence for the presence of *mokele-mbembes* was uncovered by the team. After spending five days at the lake and a two-day trek back to Boha, the team spent a further three days at Boha, where they were shown a water-hole said to have been inhabited by a *mokele-mbembe* in 1984, before returning northward along the Likouala-aux-Herbes to Epéna, and ultimately to Impfondo. Here the Britons recuperated from the exhausting journey, thanks to the hospitality of Pastor Eugene Thomas, before setting forth on the expedition's final stretch, to Brazzaville, where it formally terminated on 5 May 1986 – a total span of 55 days.

Despite increasing conflict between the British and Congolese contingents, Operation Congo was a worthy successor to the *mokele-mbembe* quests already conducted over the years, and provided medical assistance to the local Congolese. It also deposited a collection of biological specimens with the British Museum (Natural History), including a specimen of a hitherto unknown subspecies of the agile mangabey monkey *Cercocebus galeritus*.

The second Operation Congo took place in late 1992, and included Gibbons and optometrist Liz Addy among its members. It was primarily a reconnaissance trip to prepare for what may be a more extensive foray at some future date, but during its journey up the Bai River from Kinami it succeeded in reaching two hitherto unexplored lakes, Tibeke and Fouloukou (a known *mokele-mbembe* haunt, according to the locals), situated to the west of Lake Tele. It also delivered 268 lb of medical supplies to the mission dispensary at Impfondo, together with clothing, vehicle spare parts and educational aids for other missions and churches.

Although Operation Congo 2 did not provide the team members with any first-hand *mokele-mbembe* observations of their own, it must surely have increased very substantially the likelihood of future sightings by the native Congolese since, during the team's visit to four villages, Liz Addy handed out 200 free pairs of spectacles!

During the first Operation Congo, the team encountered at Epéna an American journalist called Rory Nugent, making his way by plane, boat, and on foot on a solo journey to Lake Tele to seek out the *mokele-mbembe*. After reaching Tele, Nugent spied a black periscope-like object at a distance of about 1000 yards. It was just beyond his camera's range, but he took several photos in case he could capture something identifiable on film. As his book *Drums Along the Congo* (1993) reveals, however, the results were far too blurred.

In 1989, British traveller–writer Redmond O'Hanlon led a four-month, two-man expedition to Lake Tele, and concluded that reports of *mokele-mbembes* were based merely upon sightings of elephants crossing rivers with their trunks curved up above the water surface.

In February 1993, a ten-man British expedition organized by children's TV presenter Tommy Boyd and led by explorer Barry Marshall conducted a five-week exploration of river caves supposedly frequented by Cameroon's version of the *mokele-mbembe*. Dinosaur pictures that the team showed to the natives elicited no response, nor did the name '*mokele-mbembe*' (why didn't the team try '*amali*' or '*jago-nini*'?).

When could a dinosaur not be a dinosaur?

Understandably, many scientists are decidedly uncomfortable with the theory that the Congo's *mokele-mbembe* along with its counterparts elsewhere in Africa are indeed living dinosaurs, insisting instead that there must be other, less radical explanations

for sightings of these creatures – but what other explanations are these on offer?

Whatever their specific identity may be, they are clearly either mammals or reptiles. The only known mammals deserving of even the slightest consideration as identities for the *mokele-mbembe* clan are the common hippopotamus, African manatee, and African elephant.

The hippo however, can be readily discounted – it is found neither in the Likouala nor in several other localities allegedly frequented by these putative dinosaurs, and in any case it bears no resemblance to the long-necked mystery beasts which are under investigation here.

Although the African manatee *Trichechus senegalensis* does occur in parts of the Congo and elsewhere within the *mokele-mbembe*'s apparent distribution range, it is far too small, with a total length not exceeding 12 ft. Moreover, with an almost neck-less, seal-like body with front flippers and no hind limbs, and possessing a spatulate horizontal tail fin rather than a true tail, it looks even less like the *mokele-mbembe* than does the hippopotamus.

As for the African elephant, although its size is closer to the *mokele-mbembe*'s, and its distribution range is compatible, its morphology is very different. And the idea that *mokele-mbembe* reports could be based upon sightings of elephants wading through swamps with only their trunks and the tops of their heads projecting above the water surface is one that beggars belief. Such encounters are hardly likely to be very frequent, and it is both insulting and credulous to assume that experienced native hunters (including *mokele-mbembe* eyewitness Emmanuel Moungoumela, someone who has spent his life hunting elephants in the Likouala swamplands) are incapable of recognizing a partially-submerged pachyderm.

The only other mammalian contender worthy of contemplation is some wholly novel species that happens to look very like a sauropod dinosaur – but as no mammal of this nature is known from either the present or the past, the chances of a dinosaur-like mammal lurking in the Likouala yet still undiscovered by science must assuredly be far less likely than the unverified survival of a sauropod, whose one-time reality is at least well-documented in the fossil record.

Worth noting here is that cryptozoologist Dr Bernard Heuvelmans has suggested that sightings in temperate zones of long-necked Nessie-type lake monsters, as well as of morphologically similar sea serpents, involve an undiscovered species of giant, long-necked seal (pp. 93–100). Could such a beast explain the *mokele-mbembe* sightings too? There is no palaeontological evidence, however, that such a seal has ever evolved, and the reports of three-clawed footprints left behind by *mokele-mbembes*, plus their possession of a long, discrete tail, all argue against the seal theory.

The outlook for finding a satisfactory explanation for the *mokele-mbembe* is not greatly increased by turning to contemporary reptilian candidates either. Of the three principal contenders, two, the Nile crocodile and the water python, both native to the Likouala and other relevant localities, can be swiftly eliminated, as their notable size cannot compensate for their lack of similarity to the beasts described by eyewitnesses as the *mokele-mbembe*.

Somewhat more promising is the third candidate, the soft-shelled freshwater turtle *Trionyx triunguis*. According to the textbooks, this long-necked species rarely exceeds 3 ft in length, but Agnagna claims that specimens twice as long, known locally as the *ndendecki*, occur in the Likouala, and some natives have reported seeing specimens with shells 12–15 ft in diameter! Although this latter claim is undoubtedly an exaggeration, it does suggest that individuals considerably larger than textbook examples do exist here. Moreover, when spied at a distance with only their long neck and their shell's uppermost portion above the surface of the water, such creatures could certainly resemble a partially submerged sauropod.

Equally worthy of note is that this species possesses a noticeably elongated snout, yielding a snorkel-like tube for breathing purposes – and, as mentioned earlier, Agnagna's sketch of the supposed *mokele-mbembe* spied by him in 1983 depicts it with a distinct, elongated snout. Could it have been a *Trionyx* rather than a bona fide *mokele-mbembe*? Also, as pointed out by auditory sciences researcher Dan Gettinger (*ISC Newsletter*, winter 1984), Agnagna's description of the creature moving its head around as if to locate the source of the noise when he was approaching it at a distance of around 700 ft favours a *Trionyx* identity rather than a sauropod. Based upon fossil evidence, most archaic reptiles possessed a huge stapes (middle ear bone) that would have severely restricted their auditory sensitivity, limiting it to the detection of fairly intense vibrations of the substrate in the immediate vicinity (e.g. its own footsteps on solid ground).

Perhaps some reports of *mokele-mbembes* have been based upon poorly observed specimens of this very large, soft-shelled turtle – but not in those cases when the creature was seen at close range, and when raised mostly if not completely out of the water.

Being well aware of just how radical the concept of a living dinosaur existing undiscovered by science would seem to the world at large, Mackal, in his book's analysis of the *mokele-mbembe*'s zoological identity, also examined the more conservative possibility that it is an extremely large lizard akin to the iguanids or the varanids (monitors).

However, as no lizard with a neck even remotely as long in proportion to its body as the *mokele-mbembe*'s is known to science, it would have to be a major new species – even so, it would still not correspond as closely to eyewitness descriptions as does a sauropod dinosaur. Even its footprints would be incorrect, because lizards usually have five well-developed claws on their feet, whereas the *mokele-mbembe*'s tracks show only three – a diagnostic characteristic of certain sauropods.

When faced with such overwhelming objections to all of the more orthodox identities on offer, yet having to hand, in the shape of the average sauropod, a creature exactly matching the morphology of the *mokele-mbembe*, is it any wonder that the concept of a living dinosaur as the answer to this reclusive mystery of the marshlands is given such credence within the cryptozoological community?

Secrets of the mokele-mbembe*'s success*

Cryptozoological sceptics routinely disparage the mystery of the *mokele-mbembe* on the grounds that if this beast genuinely exists, its great size and spectacular appearance would have guaranteed its formal scientific discovery long ago. If only it were as simple as that!

As I revealed in my previous book *The Lost Ark. New and Rediscovered Animals of the 20th Century* (1993), many of the world's most spectacular animals had remained undiscovered and undescribed by science until this present century.

Quite aside from the coelacanth, these include: the okapi (Zaire's short-necked giraffe, discovered in 1901); giant forest hog (world's largest wild pig, in 1904); Komodo dragon (world's largest lizard, in 1912); megamouth shark (a huge bizarre species with a gigantic mouth, in 1976); clusters of giant worms in 8-ft-tall tubes with long scarlet tentacles (thriving on the seafloor near the Galapagos Islands, in 1977); and the Vu Quang ox (the largest land mammal to be discovered for over 50 years, in 1992). Hence the *mokele-mbembe*'s ability to remain hidden from scientific detection even in modern times is hardly unprecedented.

Equally significant are the creature's surroundings. Few people without first-hand experience can even begin to comprehend the exceptionally inhospitable nature of the Likouala swamps – one of the most forbidding, environmentally hostile areas to be found anywhere in the world today. It may be home to the *mokele-mbembe*, but it is certainly not designed for human comfort – boasting such dubious delights as stinking mud that envelops travellers unfortunate enough to be wading through it in liberal clouds of foul methane and hydrogen sulphide, and sweltering temperatures exceeding 89°F (32°C) are accompanied by high humidity, sometimes approaching 100 per cent. The terrain is infested by highly poisonous snakes (including mambas) and swarms of malaria-transmitting mosquitoes, and there is a constant threat of debilitating ailments and diseases.

During Operation Congo, for instance, and despite being young and very fit at the expedition's onset, all four British participants experienced bouts of severe illness – in particular, Gibbons lost 24 lb in weight through chronic diarrhoea and various skin diseases, Rothermel contracted malaria, and Della-Porta suffered bouts of dysentery.

Clearly, therefore, any attempt to travel through the swamps is fraught with difficulties, thereby rendering active pursuit of their more elusive denizens (especially ones capable of submerging themselves beneath the water) a near impossibility. Even the native Congolese and pygmies avoid the worst areas, so the likelihood of a western expedition successfully exploring them is remote in the extreme – and any strange animals inhabiting such regions are very likely to remain undiscovered by science.

Another contributing factor to the *mokele-mbembe*'s continued scientific anonymity is the powerfully potent fusion of fear and veneration incited among the native people by this formidably large creature. During Mackal's expeditions, some natives sought to convince them that magic was required in order to catch sight of a *mokele-mbembe*, and the team discovered on several occasions that, although there were people in the vicinity who had indeed observed this species, they were unwilling to tell them about it because they feared that they would be attacked by their village elders. Apparently, there is a long-standing tradition among the native Congolese that if anyone sees a *mokele-mbembe* and afterwards speaks about his sighting, death will inevitably follow. Equally, to kill a *mokele-mbembe* is to incur disaster, not only for its killer but also for his entire tribe – thus reducing to an absolute minimum any chance for scientists visiting native villages to find skulls or other remains of *mokele-mbembes* preserved there in the way that those of many other animals are.

Any activity that could be perceived as a sacrilegious intrusion upon the *mokele-mbembe*'s existence is also taboo. Thus, when Rory Nugent spied what he and his native guides believed to be a *mokele-mbembe* on Lake Tele, he was convincingly persuaded against rowing his boat nearer to it in the hope of obtaining better photos – one of his guides pointed a loaded shotgun at his head, and another held a spear poised in readiness to impale him if he should violate this 'supreme jungle deity' by approaching it. When faced with such problems as these, it is little wonder that cryptozoologists often experience difficulty in eliciting data regarding mystery beasts from the local populace!

There could be another, much more tangible reason for the natives' great fear of killing one of these beasts – the flesh of *mokele-mbembes* may be poisonous or may harbour virulent microbes. During his first expedition, Mackal learnt that in 1959 a tribe of pygmies living near Lake Tele had actually killed a *mokele-mbembe*. They had speared it to death, after it had attempted to force its way through a barricade erected to prevent these animals from entering the lake via one of its lobes and disturbing the pygmies' fishing activities. If only its remains had been salvaged! Instead, it was summarily hacked apart, and its flesh eaten – after which all of the partakers became violently ill and died! A warning to all who might be considering the novelty of dining upon a dinosaur!

Yet if the *mokele-mbembe* really is a living dinosaur, how did its ancestors survive the great extinction that had annihilated all other dinosaurian lineages by the close of the Cretaceous? In fact, as this chapter will reveal, cryptozoologists are far from certain that this is the *only* type of dinosaur alive today; possible sightings from several other localities worldwide are also on file. Relative specifically to the *mokele-mbembe*, there are two major factors involved that would doubtless have assisted the survival of sauropods in those African localities where long-necked mystery beasts have been reported.

As Jonathan Kingdon expounded in his book *Island Africa* (1990), mainland Africa is far from being the zoogeographically homogeneous continent customarily portrayed in nature books. Even the standard partitioning of its wildlife into four principal ecological zones – desert, savannah, forest, and upland – obscures the extraordinary abundance of enclaves that Kingdon calls 'centres of endemism', each containing localized (often rare) species found nowhere else. Although these centres of endemism are land-locked, the discrete and individual nature of their wildlife is such that, for all practical purposes, they can be looked upon as islands – effective autonomies isolated from environmental and evolutionary pressures elsewhere.

One such area that falls within this category is the crescent-shaped region stretching from the Likouala marshes to the southern portion of Chad. Flanked by the middle Congo River's west bank tributaries, it also takes in the Central African Republic, plus the bordering areas of Gabon and Cameroon. Here, amid these mostly inaccessible jungle swamplands, is a world largely unchanged for over 60 million years. With a post-Cretaceous history notably lacking earthquakes, mountain formation or subsidence, glaciations, or climatic perturbations, its wildlife has enjoyed a degree of environmental stability experienced by few other zoogeographical communities in Africa – a stability reflected by the number of ancient species that have lingered on into the present day here while dying out long ago elsewhere.

Consequently, if there is anywhere in Africa where dinosaurs might have persisted, little changed morphologically or behaviourally, and undisturbed by outside forces, here is where it would be. And as this is also where reports of putative dinosaurs emanate, from native peoples with no knowledge of evolutionary and geophysical stability, palaeontology, and suchlike, it is little wonder that cryptozoologists pay serious attention to such reports.

In addition, the fact that it is apparently of sauropod descent will have greatly increased the *mokele-mbembe*'s chances of survival here. In Professor R. McNeill Alexander's *Dynamics of Dinosaurs and Other Extinct Giants* (1989), this renowned expert in biophysics and biomechanics set out to investigate the conflicting views on whether dinosaurs were endotherms ('warm-blooded', thereby exhibiting a mammalian-type metabolism) or ectotherms ('cold-blooded', thereby exhibiting a reptilian-type metabolism like that of crocodiles, snakes, lizards, and turtles). He did this by conducting two parallel series of calculations determining how much dinosaurs of various body sizes would have been heated by their own metabolism. One set of calculations assumed a mammalian-type metabolism for them, the other a reptilian-type metabolism.

The results indicated that, unless they lost a great deal of water through evaporation, terrestrial dinosaurs of sauropod size with mammalian-type metabolism and inhabiting hot climates would be liable to overheat. If, conversely, they had typical reptilian-type metabolism, overheating would not be a problem. As the *mokele-mbembe* spends part of its

time on land, feeding and moving from one lake to another, it would therefore function most effectively with reptilian metabolism – as confirmed by the known presence in the Likouala of other sizeable reptiles with this type of metabolism, including Nile crocodiles, pythons, and some very large monitor lizards. If they can survive here, why not a 'cold-blooded' dinosaur?

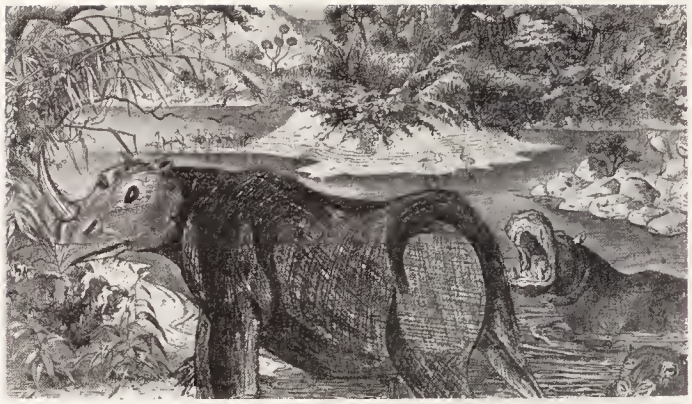
Moreover, Alexander calculated that, despite their body size, such dinosaurs would use energy at roughly the same rate as mammals with only one-fifth of their body mass – i.e. for every 3-ton elephant sustained by a given amount of vegetation, that same amount could also have sustained at least one 15-ton *Diplodocus*! Thus there would be ample food for *mokele-mbembes* in this vast area, and this comparison also explains how beasts as large as these could thrive on such a seemingly insubstantial diet as *Landolphia* gourds.

All in all, the concept of a contemporary species of dinosaur inhabiting the northern Congo and its environs is actually a long way removed from the improbable, unrealistic vision so swiftly discounted by cryptozoological sceptics. However, even if the *mokele-mbembe* is indeed exposed one day as a surviving sauropod, this extraordinary saga will still be far from over. While questioning the Congolese natives during his expeditions, Professor Mackal learnt to his amazement that the Likouala may also conceal two other, very different species of living dinosaur – known respectively as the *emela-ntouka* and the *mbielu-mbielu-mbielu*.

The *emela-ntouka* – 'killer of elephants'

Another cryptic creature from the Congo sorely in need of a satisfactory explanation, the formidable *emela-ntouka* was alluded to by the natives almost as frequently as the *mokele-mbembe* when they were questioned by Mackal. Semi-aquatic once again, it is said to be at least the size of an elephant, but can be instantly differentiated from the latter by virtue of its long, heavy tail and in particular by the very large, sharp horn borne upon its snout.

Although an apparent vegetarian, its temperament is far from placid, according to local testimony – for when submerged in a lake, this remarkable creature will not hesitate to attack any elephants or buffaloes that unwisely choose to enter or travel through it, utilizing its deadly horn to stab and tear apart its hapless victims. Indeed, this belligerent behaviour is responsible for its native name – '*emela-ntouka*' translates as 'killer of elephants'.



Representation of the emela-ntouka, *based upon eyewitness descriptions. (Dr Karl P.N. Shuker)*

It must also be the creature noted in a *Mammalia* article (December 1954) by Lucien Blancou, who had been a senior game inspector in the Likouala area of the Congo (then known as French Equatorial Africa). According to Blancou: 'Around Epéna, Impfondo, and Dongou, the presence of a beast which sometimes disembowels elephants is also known . . . A specimen was supposed to have been killed 20 years ago at Dongou.'

In the past, zoologists seeking a possible identity for this animal have suggested that it might be some form of aquatic rhinoceros, but its heavy tail opposes this possibility – as does the alleged appearance of its horn, said to resemble the ivory tusk of an elephant rather than the compressed mass of hair that constitutes a rhino's horn. From his own investigations, Mackal has cautiously suggested that the Congo's aquatic elephant killer might conceivably be a present-day species of ceratopsian dinosaur, comparable to the single-horned *Monoclonius* (which also possessed a long, heavy tail) and therefore related to prehistory's more famous, three-horned *Triceratops* and the multi-horned *Styracosaurus*.

The horns of ceratopsians were true horns, formed from the fusion and upgrowth of the nasal bones, and would thus resemble ivory at all but the closest of observation ranges.

The chipekwe – *an eastern equivalent*

Just as the *mokele-mbembe* appears to have counterparts far beyond the Likouala swamplands, so too does the *emela-ntouka*. The most notable of these is the *chipekwe*, which has long been reported from East Africa's Lakes Bangweulu, Mweru, and Tanganyika, and the Kafue swamps. According to a *Daily Mail* letter of 26 December 1919 by C.G. James, who had lived in Africa for 18 years, this aggressive

inhabitant of the deepest swamps is of enormous size, possesses a single huge ivory tusk with which it kills hippopotamuses (but does not eat them), and leaves behind footprints resembling those of its victims.

The nature of the *chipekwe*'s 'ivory tusk' was clarified by John G. Millais, who noted in his book *Far Away Up the Nile* (1924) that, according to big-game hunter Denis Lyall, these three lakes harboured, at least until recently, a mysterious animal that he referred to as a water rhinoceros and which he described as '. . . some large pachyderm, somewhat similar in habits to the hippopotamus, but possessing a horn on the head'.

Furthermore, as someone who had spent a great many years on the shores of one of this animal's principal localities, J.E. Hughes was able to substantiate Millais's testimony in his own book *Eighteen Years on Lake Bangweulu* (1933), reporting that the Wa-Ushi natives had once killed just such a beast as this in the Luapula River, linking Mweru with Bangweulu:

Two views of Lake Bangweulu: reputed home of the chipekwe. *(Alan Brignall)*

> It is described as having a smooth dark body, without bristles, and armed with a single smooth white horn fixed like the horn of a rhinoceros, but composed of smooth white ivory, very highly polished. It is a pity they did not keep it, as I would have given them anything they liked for it.

So too would any curious-minded zoologist – bearing in mind that no known rhino, either from the present or from the past, has a horn composed of ivory, and that this description recalls the horns of ceratopsian dinosaurs.

Finally, the name '*irizima*', as noted earlier (p. 20), is applied by natives living in the vicinity of Zaire's Lake Edward not only to long-necked water beasts of the *mokele-mbembe* variety but also to what may be an *emela-nouka* equivalent, described by Captain Hichens as '. . . like a gigantic hippopotamus with the horns of a rhinoceros on its head'. His use of 'horns' in the plural is intriguing – just an error of reporting, or an indication that the Lake Edward creature is visibly distinct from the *emela-ntouka* and *chipekwe* unicorns?

The *mbielu-mbielu-mbielu* – a surviving stegosaur?

A third dinosaur look-alike of the Likouala is the *mbielu-mbielu-mbielu*. According to one alleged eye-witness – a young woman called Odette Gesonget, from the village of Bounila – this triple-named anomaly is a semi-aquatic creature 'with planks growing out of its back'. In a bid to identify it, Mackal showed Gesonget several illustrated books depicting present-day animals and also those from the distant past. The picture she unhesitatingly selected was of the prehistoric plate-bearing dinosaur *Stegosaurus*. Comparable descriptions were offered, by natives encountered elsewhere during Mackal's Congolese travels. Yet there is no suggestion from fossil evidence that stegosaurs exhibited any aquatic inclination.

Is the mbielu-mbielu-mbielu *an undiscovered modern-day species of stegosaur? (Dr Karl P.N. Shuker/reproduction courtesy of Drayton Manor Park & Zoo)*

It is possible that this beast, whatever its taxonomic identity may be, is one and the same as another mystery animal from the Likouala swamplands – the *nguma-monene*, reported from the Mataba tributary of the Ubangi River. According to native descriptions, it resembles a colossal snake (at least 130 ft long!), but bears a serrated ridge along most of its body's length consisting of numerous triangular protrusions, and can walk upon land, with a low-slung body and forked tongue. Could this be a snake-like dinosaur, or, alternatively, a primitive reptile descended from the ancestral forms that gave rise to lizards and snakes?

Mackal favours a single, very large, and radically new species of monitor lizard as the most satisfactory explanation for both the *nguma-monene* and the *mbielu-mbielu-mbielu*. None the less, the latter's stegosaurian characteristics are difficult to dismiss absolutely – as he confessed in his book: 'For me, *mbielu-mbielu-mbielu* remains an enigma.'

There is little doubt that whatever their precise identities may be, there are some major zoological discoveries still waiting to be unfurled by a real-life Professor Challenger in the depths of the Dark Continent, but especially amid the Lost World of the Likouala – a vast, primeval wilderness comprising an ideal haven for secluded survivors from a past age.

Dragons of Babylon, and dinosaurs in the Bible

In the summer of 1983 I visited the Vorderasiatisches Museum, part of Berlin's Staatliche Museums, to gaze upon one of the most spectacular monuments from ancient history – the magnificent Ishtar Gate of Babylon. Many other visitors were also peering intently at this marvellous edifice, sumptuously decorated with lifelike depictions of various animals, but to me it had an extra significance – for out of all of the people there, it is possible that I alone realized that we could well be looking at the portrait of a living dinosaur!

In search of the sirrush

During his reign (605–562 BC), King Nebuchadnezzar II of Babylonia in Mesopotamia oversaw the creation of his empire's capital, the holy city of Babylon, dedicated to Babylonia's supreme deity, Marduk. Babylon was encircled by huge walls, wide enough for chariots to be driven along their summits, and pierced by eight huge gates. The most magnificent was the Ishtar Gate, through which visitors passed in order to enter the city.

Befitting such an important edifice, the Ishtar Gate was a spectacular sight, with a colossal semicircular arch, flanked by enormous walls and leading to a breathtaking processional way, along which visitors walked to reach the city's religious centre. The gate, its walls, and the processional walls were covered by a brilliant array of highly glazed enamelled bricks, yielding a backdrop of vivid blue for numerous horizontal rows of eyecatching and very realistic bas-reliefs of animals. On the gate and its flanking walls, six rows of fierce grey bulls alternated with seven rows of grim golden dragons, and along the processional walls were two rows of haughty marching lions, but the most important member of this trio of mighty beasts was the dragon – for this was the sacred beast of Marduk.

Following the eventual fall of Babylonia, its walls and gates became buried underfoot, and their glory was hidden for many centuries – until 3 June 1887 when German archaeologist Professor Robert Koldewey found a fragment of an ancient blue-glazed brick that stimulated his curiosity and led to a full-scale excavation, beginning in 1899. Three years later, the animal-adorned Ishtar Gate rose up from the dust of the past like a cobalt phoenix, revealing its bulls, its lions – and its exalted but enigmatic dragons.

Known as the *sirrush*, the Ishtar dragon was a source of great bewilderment to Koldewey, because, whereas the appearance of all other seemingly fabulous, mythical animals in Babylonian tradition had changed drastically over the centuries, depictions of the *sirrush* (as also present on seals and paintings predating the Ishtar Gate by at least a millennium) had remained the same – just like those of real animals, like the lion and bull. Did this mean, therefore, that the *sirrush* was itself a real-life species? But if it was, what could it be? Certainly, it did not – and still does not – resemble any animal known to be alive today. After all, what modern-day species has a slender scaly body, with a small head bearing a pointed horn (or a pair – the Ishtar *sirrush* is only depicted in profile) on its forehead and ringlet-like flaps of skin further back, a long slender neck, a pair of forelimbs with lion-like claws, a pair of hindlimbs with eagle-like claws, and a long tail?

Boldly, Koldewey announced in 1913 that, in his opinion, the creatures to which the *sirrush* most closely corresponded were the dinosaurs. Moreover, he deemed it possible that in order to explain the unchanging nature of *sirrush* depictions, and also various mentions of dragon-like beasts in the Bible, some such creature must have been kept within one or more of Babylon's temples by the priests of

Marduk. By 1918, he had refined his belief, identifying the bipedal ornithischid dinosaur *Iguanodon* as the closest fossil relative of the *sirrush*. If, however, the *sirrush* was truly a creature of historic, rather than prehistoric, times, where had it originally come from – there is no evidence that giant reptilians were ever native to Mesopotamia, and how could it have evaded scientific detection?

This mystery greatly intrigued cryptozoological investigator Willy Ley, who suggested that the only locality from which such a creature could have been originally transported to Babylon during the reign of Nebuchadnezzar but yet remain wholly unknown to modern-day science was Central Africa, and in his book *Exotic Zoology* (1959) he recalled some of the accounts given earlier in this chapter concerning swamp-dwelling dinosaurian beasts reported from this portion of the Dark Continent. In addition, when Schomburgk returned to Europe from Central Africa during the early twentieth century with tales of living dinosaurs, he also brought back a glazed brick that he had found there – a brick just like those in the Ishtar Gate. Is this where the far-travelling ancient Babylonians had obtained them, along with stories – and perhaps even the successful capture from time to time – of real-life dragons?

Others have since expanded upon Ley's views, and the prospect that the *sirrush* was a living dinosaur has gained credence, but opinion as to the precise type of dinosaur has moved away from *Iguanodon* toward a sauropod dinosaur, notwithstanding the *sirrush*'s horn(s).

Initially, the *sirrush* is hardly reminiscent of such creatures. If, however, the Chaldean artists responsible for the Ishtar Gate bas-reliefs and other *sirrush* portrayals had not actually seen a living sauropod with their own eyes but were relying solely upon descriptions of one, then it is not too difficult to accept the resulting *sirrush* as nothing more dramatic than a distorted depiction of a sauropod, no doubt embellished by its creators' imagination.

Bel and the behemoth

One Biblical reference that inspired Koldewey's belief in the one-time existence of a real-life *sirrush* maintained by Babylon's temple priests is an episode documented in the *Apocrypha* concerning Daniel, who, after discounting an earlier deity as nothing more than a brass idol, was shown a mysterious creature housed within the temple of the Babylonian god Bel, and which was venerated by the fearful populace.

> And in that same place there was a great dragon or serpent, which they of Babylon worshipped. And the king said unto Daniel, Wilt thou also say that this is of brass? Lo, he liveth, he eateth and drinketh; thou canst not say that he is no living god: therefore worship him. Then said Daniel. I will worship the Lord my God: for he is a living God. But give me leave, O king, and I shall slay this dragon without sword or staff. The king said, I give thee leave.

True to his word, Daniel accomplished his vow, using the unusual if effective expedient of choking the creature to death by forcing lumps of bitumen, hair, and fat down its throat – a brave act if genuinely faced by a conflagrating dragon, but one that will not endear him to cryptozoologists if it is ever shown that his adversary was nothing more rapacious than a morose *mokele-mbembe* a long way away from its home amid the Congolese swamplands.

Another biblical monster that has never been satisfactorily identified with any known animal alive today is the behemoth, which is described in Job, 40:15–24, as follows:

> Behold now Behemoth, which I made with thee; he eateth grass as an ox.
> Lo, now, his strength is in his loins, and his force is in the navel of his belly.
> He moveth his tail like a cedar: the sinews of his stones are wrapped together.
> His bones are as strong pieces of brass; his bones are like bars of iron.
> He is the chief of the ways of God; he that made him can make his sword to approach unto him.
> Surely the mountains bring him forth food, where all the beasts of the field play.
> He lieth under the shady trees, in the covert of the reed, and fens.
> The shady trees cover him with their shadow; the willows of the brook compass him about.
> Behold, he drinketh up a river, and hasteth not: he trusteth that he can draw up Jordan into his mouth.
> He taketh it with his eyes: his nose pierceth through snares.

Over the centuries, four principal identities have been touted by theological and zoological scholars – the ox, Nile crocodile, elephant and hippopotamus. Least popular is the ox – apart from its herbivorous nature it has no similarity to the behemoth. Only the New English Bible supports the crocodile's candidature – certainly, the concept of a vegetarian crocodile is an implausible one, to say the least. The elephant's supporters are also few – only Professor George

Caspard Kirschmayer in *Un-Natural History of Myths of Ancient Science* (1691) and Dr Sylvia Sikes in *The Natural History of the African Elephant* (1953) have seriously attempted to link the two great beasts with one another.

The most popular and (until recently) most favourable pairing of the behemoth has been with the hippo – whose cavernous mouth, prodigious drinking capacity, mighty build, sturdy skeleton, swamp-dwelling lifestyle, herbivorous diet, and status as the largest animal native to the Bible lands compare satisfactorily with the behemoth – but not conclusively. How, for example, can the hippopotamus 'moveth his tail like a cedar'? This description implies a very long, powerful tail – not the puny, inconspicuous appendage sported by the hippo.

And then came a late entry in the identity stakes – a living sauropod. As Professor Mackal persuasively pointed out in *A Living Dinosaur?*, not only the description of the behemoth's tail but also all of the features hitherto likened to the hippopotamus are equally applicable to one of these giant vegetarian dinosaurs. Moreover, the great size attributed to the behemoth, while far exceeding that of the hippo would be much more compatible to a sauropod of *mokele-mbembe* proportions. Compare the Bible's description of the behemoth (given above) with Mackal's defence of his sauropod identity for it (given below), and judge for yourself.

> The behemoth's tail is compared to a cedar, which suggests a sauropod. This identification is reinforced by other factors. Not only the behemoth's physical nature, but also its habits and food preferences are compatible with the sauropod's. Both live in swampy areas with trees, reeds and fens (a jungle swamp). Indeed, the identification of the biblical behemoth as a sauropod dinosaur provides excellent correspondence between the descriptive features in the biblical text and the characteristics of these dinosaurs as inferred from the fossil record.

Equally interesting concerning this sauropod link is that the book of Job was written some time between 2000 and 700 BC, thereby considerably predating the Ishtar Gate's depictions of the *sirrush*. Clearly, then, the gate did not inspire the behemoth account – instead, this was based upon something very large and visually impressive that was known in the Middle East long before the birth of Nebuchadnezzar.

On first sight, the Bible must seem the *last* place where zoologists would expect to find details of living dinosaurs – but if living dinosaurs (or travellers' reports of them) were known in this region of the world at this particular time in man's history, the Bible is unquestionably the *first* place where zoologists should look for evidence of their existence.

Perhaps now, thanks to a long overdue cryptozoological scrutiny of this ancient treasure trove of natural history lore, the vital evidence has at last been disclosed.

The golden serpents of Tasek Bera

Outside Africa, one of the most promising sites for dinosaurian encounters may well be a remote, reedbed-encircled lake in the Malaysian state of Pahang, called Tasek Bera. To most people in the western world, it was no more than a name on a map, but in 1951 it was visited by explorer Stewart Wavell, anxious to record the distinctive tribal music and customs of the little-known Semelai aborigines who inhabited this lonely, near-impenetrable locality deep within the south-east Asian jungles. During his sojourn here, he gained the acceptance and trust of the Semelai, who disclosed many of their traditional beliefs to him – by far the most remarkable of which was their claim that the lake housed giant cobra-like beasts that occasionally reared above the lake's vegetation-fringed borders.

Very interested by such stories, Wavell pursued the matter with the Semelai, and obtained the following description of these monsters. Known as the *ular tedong* and able to rise up out of the water to the height of a palm tree, Tasek Bera's 'giant serpents' have a very big snake-like head equipped with a pair of short, soft horns like those of snails, and borne upon a long neck that thickens out to a width of about 6 ft near the water surface. The head and neck are covered in thumbnail-sized scales, but the Semelai have never seen the body of one of these animals as they never come out on to land. However, the widening of the neck at its base suggests that it is attached to a much bulkier body, permanently submerged beneath the water. A long tail is sometimes spied above the surface. Of particular interest is the Semelai's claim that the *ular tedong* changes colour as it grows older. When young, its scales are dull slaty-grey and as fine as a snake's, but by the time it is fully mature they have acquired a bright golden hue and appear thicker, like a fish's.

Although he was unable to follow up this matter further before returning to his home in Kuala Lumpur, Wavell never forgot about it, and several years later his interest was reawakened when he spoke to a Malayan police officer who had an extraordinary tale

to tell concerning his own recent visit to the Tasek Bera. One late afternoon, he had been swimming by himself in a deep, open portion of the lake near the headland of Tanjong Keruing, when he happened to look over his shoulder and discovered that he was no longer alone. About 40 yards behind him, what appeared to be the head of a gigantic snake was rising high above a 15-ft-tall clump of Rassau palm, borne upon a massive slate-coloured neck that seemed smooth in texture. Moreover, two humps were also rising above the water surface, which the officer assumed to be portions of its body. Needless to say, he fled in horror to his canoe, but the great creature made no attempt to pursue him, content instead to remain poised above the water, watching his hasty retreat in unperturbed stillness. This passive manner substantiates the Semelai's testimony that despite their formidable size the *ular tedong* are harmless plant-eating beasts that make no attempt to attack humans.

After being assured by no less an authority than the Chief Police Officer of Negri Sembilan that this officer was utterly reliable and was not given to exaggeration, Wavell decided to return to Tasek Bera – utilizing a nine-day holiday to set out by canoe with some local guides along the River Pahang, and begin an earnest search for this lake's secret inhabitants.

At the conflux of the Pahang with the Sungei Bera, the river that would take him south to Tasek Bera itself, he encountered four locals who provided him with some very unexpected, additional information regarding the *ular tedong*. Whereas the vocal repertoire of most genuine snakes is apparently limited to a plethora of sibilant hisses (but see my book *Extraordinary Animals Worldwide* for some controversial exceptions to this rule), the monsters of Tasek Bera very occasionally give vent to an extremely loud cry – a single echoing boom that is said to resemble an elephantine, trumpet-like blast.

Thankful that his equipment included not only a camera but also a tape recorder, Wavell continued on his way along the 20-mile Sungai Bera, flanked by uncharted jungles and swamps, until he at last reached the lake. After spending a little time at Tanjong Keruing, scene of the policeman's sighting, he travelled on to the village of Kampong Ba'apa, home of his Semelai friends. Here he drew a picture of a *Diplodocus* sauropod and, although the tribal chief conceded that he didn't know if the *ular tedong* had legs as they had never been spied out of deep water, the picture received a favourable response. After three days, he bid farewell to Kampong Ba'apa, and returned to Tanjong Keruing, having decided to bring his search to a close by spending an afternoon and evening scanning Tasek Bera from this relatively unobstructed vantage point, in a last attempt to espy its reclusive denizens.

One of the commonest regrets of persons unexpectedly encountering a mystery beast is that they did not have a camera to hand – which makes Wavell's experience all the more ironic. After sitting quietly looking out over the lake's still waters for quite a time, Wavell decided to pick up his camera, just in case – and, just as he did so, it happened. Without any warning, an extraordinary trumpeting blast suddenly shattered the silence of this tranquil scene – a single staccato cry emanating from the centre of the lake. As Wavell later recalled in his book, *The Lost World of the East* (1958):

> It was a snort: more like a bellow – shrill and strident like a ship's horn, an elephant trumpet and sea lion's bark all in one. I was momentarily petrified, then frantically switched on the recorder, held up the microphone and waited for the next cry.

With cryptozoological inevitability, the next cry never came. The moment had passed, and everything was just as it had been before, but for Wavell, that moment had been sufficient. More like sirens than sauropods, the *ular tedong* had lured him to their watery domain through native descriptions of their unique voice – and now, at last, he had heard it for himself.

As they have never been observed on land, it is conceivable that these giant creatures are long-necked plesiosaurs (i.e. elasmosaurs) rather than sauropod dinosaurs. However, whereas the neck of sauropods does indeed widen noticeably at its point of junction with the body, in elasmosaurs this widening is far less pronounced, thus implying a sauropod identity, substantiated further by their allegedly herbivorous diet. As for the snail-like horns of the *ular tedong*, these could be respiratory snorkels that the animals poke just above the water surface, thereby enabling them to breathe air while remaining almost entirely submerged, as long as the water was not too deep – creatures of such enormous size, however, would run the risk of the collapse of their huge lungs if they ventured into deep water. Worth noting here is that the nostrils of *Brachiosaurus* and certain other sauropods were positioned on their forehead, suggesting that they too may have possessed snorkels for breathing when submerged in fairly shallow water.

Whether plesiosaur or dinosaur, however, they do not appear to be the only examples of such creatures

thriving in this part of the world. Many miles north-east of Tasek Bera, and sited alongside the River Pahang, is a smaller but no less remote lake called Tasek Chini. This is also claimed by the natives to harbour 'giant snakes' of the *ular tedong* variety, and according to the Semelai they are actually born at the top of Gunong Chini, a mountain north-east of Tasek Bera – to which they migrate via various interlinking mountain streams, living many years afterwards here and maturing into fully grown adults.

Chinese duck-beaks and Tibetan yak-attackers

Reports of putative dinosaurs alive and well in Asia are not confined to Malaysia. Lake Tian Chai is ensconced within the crater of Jilin Province's 6400-ft-high volcano Baitoushan, along China's border with North Korea. On 23 August 1980 a team of Chinese meteorological researchers claimed a close encounter here with a peculiar beast – said to be bigger than a cow, with an elongate neck measuring more than 3 ft in length, a head shaped like that of a cow or dog, and, most memorable of all, a flat duck-like beak (an unusual characteristic recalling to mind the familiar duck-billed dinosaurs or hadrosaurs). The researchers' close encounter almost became a fatal encounter (for the creature) because one member of the team, Piao Longzhi, attempted to shoot it, but his aim was too high, and he only grazed the top of its head. Hardly surprisingly, the beast lost no time in diving back into the lake!

Many years earlier, another of these creatures had not been so fortunate. Spotted by a party of six observers, it was shot in the stomach by one of them, and after emitting a deafening howl it sank at once to the bottom of the lake. In 1981, a Chinese author called Lei Jia announced that he had seen a creature here twice on consecutive days and described it as a black reptile about 6 ft long with a long neck and an oval head. Sightings date back more than a century, and at least 500 eyewitnesses have been recorded since then, some of whom claim that this species has horns on its head and a white belly. Several scientific expeditions have sought to obtain sonar traces of these beasts, but without success so far.

Following a flurry of new sightings in 1994, describing a golden/black creature with square head, horns and long neck, a gregarious gathering of Chinese and Japanese scientists, tourists and film crews, as well as a team of scientists from North Korea, has become a near-permanent fixture around the lake's shores. Yet, despite their evident interest and enthusiasm, all that they have to show for their efforts to date is a photo of the beast that, in classic cryptozoological tradition, is so blurry that it could be just about anything.

What makes this case even more puzzling than normal is that the volcano housing Lake Tian Chai erupted in 1702, so any species living here today have been in residence for less than three centuries. Nevertheless, it is worth noting that before the Communist Revolution, which led to a name change, this lake had been known locally as Dragon Lake. Also, with at least one sighting on record featuring five of these creatures together, there could well be a thriving population here – but from where did these duck-billed denizens originate?

Equally intriguing is a report from June 1980 concerning a long-necked marauder indigenous to Tibet's Lake Wembo (also spelled 'Wenbu' or 'Menbu'). This enormous but remote expanse of water, occupying about 310 square miles, and 300 ft deep in parts, is rich in fish life, and may also be home to some much more sizeable life forms. For, according to the *Peking Evening News*, a huge creature resembling a sauropod or plesiosaur with a body the size of a house is the scourge of local yak herdsmen here.

Among its various misdeeds it was blamed in the report for the recent, mysterious disappearance of a yak that had been left for a short while to graze near the lake's shore by a district secretary of the Communist Party. When its owner returned a while later, to take it to market, only traces of its body could be found, but these apparently indicated that the unfortunate animal had been seized, hauled into the lake, and consumed there by some much larger creature. In another incident, the beast was also held responsible for the disappearance of a local villager while rowing on the lake; his body was never found. As sauropods are vegetarians, this excludes them as candidates for the identity of Tibet's aquatic flesh-eater; but if these reports are genuine, *some* form of giant reptile could indeed be involved.

Also of note is the supposed sauropod of western Java's Lake Patenggang. Clearly more experienced than the Tibetan herdsmen in thwarting prehistoric aggressors, the local fishermen pacify this 18-ft-long monster by burning opium on the lake's shores.

The beast from Partridge Creek

The Arctic wastelands of the Yukon Territory, on the borders of Canada and Alaska, are surely the last place anyone might expect to meet a dinosaur – which is why the following case merits a prominent place among the dubitanda of cryptozoology.

The extraordinary tale of the beast from Partridge Creek was first told on 15 April 1908, within the pages of a French journal called *Je Sais Tout*, by one of the creature's eyewitnesses, French traveller Georges Dupuy. According to Dupuy, the adventure had begun one day in 1903, when a banker from San Francisco called James Lewis Buttler and a local gold prospector named Tom Leemore were hunting three large moose amid the marshy tundra near the Yukon's Clear Creek, about 100 miles east of Dawson City. Suddenly, one of these burly deer raised its head as if it had heard something unexpected in the vicinity, and just as it did so a second member of the trio emitted a loud bellow of alarm, sending all three of them fleeing southwards with all speed.

As the world's largest living species of deer, standing 7 ft at the shoulder and weighing up to half a ton, the moose is not a creature to be readily intimidated by anything – which is why the two hunters were so surprised by their quarry's impromptu flight. When they reached the spot from where the moose had fled, however, the reason for these creatures' uncharacteristic behaviour became clear. There in the snow was the clear impression of an enormous body belonging to some unidentifiable beast of monstrous proportions.

The beast's belly had ploughed into the river bed's swampy mud a massive furrow 30 ft long, 12 ft wide, and 2 ft deep, which was flanked by gigantic footprints measuring 2½ ft across and 5 ft in length, each also yielding impressions of sharp 1-ft-long claws. Completing the clues left behind by this unseen goliath was the imprint of a mighty 10-ft-long tail spanning 16 in across its middle.

Notwithstanding the nightmarish visions conjured up by such dramatic dimensions, the two men decided to follow the monster's tracks, which led after several miles to a gulch known as Partridge Creek, where the tracks simply came to an end – giving the men cause to speculate that it must have leapt directly up into the gulch's encompassing cliffs.

Following this, they made their way by canoe along the McQuesten River to the nearby outpost of Armstrong Creek – an Indian village where Buttler had earlier arranged to meet Dupuy to take him hunting, and which was home to the Reverend Father Pierre Lavagneux, a French-Canadian Jesuit priest. When Dupuy and the priest heard about the monster, they were highly sceptical at first, but eventually Buttler persuaded them to return to Partridge Creek with Leemore and himself in a second search for it, aided by some local Indians.

After a day's intensive but fruitless search of the immediate area and some distance beyond it in all directions, the party of weary beast hunters had resigned themselves to failure, and decided to establish camp at the top of a rocky ravine. Thoughts of confronting monsters had been largely suppressed by the more practical goal of preparing a warm meal – until, wholly without warning, they received a terrifying reminder of the reason for their presence there. A hideous roar broke the Arctic stillness, and as the startled hunters reached for their rifles one of them pointed with shaking hand to the opposite side of the ravine where the crimson rays of the dying sun revealed a heart-stopping sight. A veritable monster in every sense of the word was clambering up its slope!

Black in colour, at least 50 ft long, and estimated by Buttler to weigh about 40 tons, their horrific visitor continued to climb upwards for a time, mercifully unaware of its terrified human eyewitnesses' close proximity. When it was about 200 paces away, it paused for 10 minutes or so, furnishing them with ample opportunity to observe it at close range in all its spine-chilling glory. Although profusely splattered with thick mud, its hide could be seen to bear many coarse, grey-black bristles like those of a wild boar, and a hideous mass of blood and saliva oozed from its cavernous jaws. Most remarkable of all, however, was the rhino-like horn perched prominently if somewhat incongruously near the end of its snout.

The Indians cowered in terror behind a large rock, and the others were rendered momentarily speechless by the monstrous apparition, but when it became clear that it had not detected them the priest gained sufficient control of his voice to whisper between still-chattering teeth: 'A ceratosaurus ... It's a ceratosaurus of the Arctic Circle!'. *Ceratosaurus* was a large flesh-eating bipedal dinosaur of the Jurassic Period, related to the later, larger *Tyrannosaurus rex* and readily identified by the large horn near the tip of its upper jaw.

As they continued to watch, the beast suddenly reared up on to its massive hind legs like a hellish kangaroo, gave voice to another ear-splitting roar, and then disappeared back down into the ravine in a single immense bound. Not too surprisingly, the beast hunters found that the thrill of pursuing this creature had lost its former charm, and the following morning they journeyed back to Armstrong Creek. Dupuy later attempted to interest the Canadian governor at Dawson City in supplying them with a large-scale hunting party of mules and 50 armed men, but when this failed he decided to return home to France.

The matter was not quite over, however, for in January 1908 he received a letter from Father Lavagneux, dated Christmas Day 1907, in which the priest informed him that on Christmas Eve, and while in the company of ten Indians, he had seen their monstrous quarry once again – this time racing at speed over the creek's frozen river, with what seemed to be the carcass of a caribou clamped between its great jaws. Tracks identical to those found back in 1903 were clearly visible in the deep mud, and were followed by Lavagneux and company for at least two miles before being obliterated by falling snow.

That appears to have been the last time that the beast of Partridge Creek was spotted, either by Lavagneux or by anyone else, for there does not seem to be any further records on file alluding to this extraordinary creature. Bearing in mind, however, that the existence of such an animal calls for our belief in the post-Cretaceous persistence of an endothermic *hairy* dinosaur in what must surely be the least compatible habitat for any type of large reptile living today, its lack of cryptozoological credibility should hardly come as a great surprise!

A dinosaur called 'Pinky'

If there are any regions in North America with prospects (however slim) for concealing living dinosaurs, they must include the humid swamplands of Florida – especially as a creature reputedly akin to such animals has been reported there on several different occasions.

On 10 May 1975, an outboard motor boat transporting five people on a fishing trip along Florida's 300-mile-long St Johns River experienced a close encounter at a spot between Jacksonville and the Atlantic Ocean with something very peculiar – and certainly *not* pretty – in pink! At around 10 am, one of the passengers, Brenda Langley, saw the head and neck of an extraordinary creature surface a mere 20 ft from their vessel, and shortly afterwards it was also spied by the other four passengers when they turned the boat around to escape what seemed to be an oncoming storm, heralded by the arrival of some dark clouds.

According to subsequent press reports of their encounter, quoted by mystery beast chronicler Mark A. Hall in *Wonders* (December 1992), Dorothy Abram likened it to '. . . a dinosaur with its skin pulled back so all the bones were showing . . . [and] pink. Sort of the color of boiled shrimp'. She also noted that its head was at least the size of a man's, with a pair of snail-like horns bearing knob-like structures at their tips, there were flaps reminiscent of gills or fins hanging down from the sides of its head, its mouth turned downwards, its large eyes were dark and slanted, and its neck had protruded about 3 ft out of the water, revealing a seemingly serrated upper surface. Brenda Langley agreed with this description, and added that it was an ugly creature recalling pictures of dragons. Its behaviour had seemed to its eyewitnesses to be inquisitive, returning their intrigued stares with an equal extent of keen observation during its 8-second appearance – after which it submerged so effortlessly that it did not even leave behind a ripple.

Soon to receive the inevitable nickname of Pinky, the St Johns River water beast attracted sufficient media interest to elicit accounts from several other people claiming sightings of just such a beast in this same area as far back as the mid-1950s. This, of course, is hardly an uncommon feature of cryptozoological cases receiving media exposure.

However, Mark Hall has good reason for believing in the validity of these earlier Pinky reports; 20 years before the encounter of May 1975 he had seen newspaper accounts from various Jacksonville papers that described sightings of a similar creature and which themselves dated back a number of years.

Moreover, Hall discovered from an *Argosy* article written by cryptozoologist Ivan T. Sanderson that during the 1960s, while bow-hunting along the St Johns River, biology student Mary Lou Richardson, her father and a friend had all seen a very peculiar animal with a great flat head, a rather small neck, and (in Sanderson's own opinion) the overall appearance of a donkey-sized dinosaur. Four other groups of tourists saw it independently during that same day, and enquiries revealed that this animal was well known to local fishermen and hunters. In short, Pinky was far from being the cryptozoological newcomer that it had initially seemed.

Taking his lead from Sanderson, Hall has very tentatively sought to reconcile the perplexing Pinky with a species of hypsilophodontid dinosaur called *Thescelosaurus* – an 11-ft-long bipedal dinosaur the size of a small car, with five fingers on each hand and five toes per foot, a long stiff tail, and characterized by rows of bony studs set in the skin along its back that may have given it a somewhat uneven, serrated appearance. One of the last known dinosaurs, it lived during the very late Cretaceous of western North America, and was related to the larger, more familiar *Iguanodon*.

Personally, I very much doubt we need nominate

anything as dramatic as a living dinosaur when seeking to unveil Pinky's identity – at least not until we have surveyed reports describing prominently pink mystery beasts of a herpetological persuasion from elsewhere in the USA, for such beasts have been recorded far beyond the St Johns River of Florida.

Horns and hellbenders

Two centuries ago, for example, strange creatures referred to loosely as giant pink lizards were frequently reported from south-central Ohio's Scippo Creek by the first white settlers there. Hall's book *Natural Mysteries* (1991) presents a detailed investigation of these animals, concluding that they could well be the larval form of some undiscovered giant amphibian.

They were said to be at least 3 ft long but generally averaged 6–7 ft, were invariably pink in colour, sported large horns ('like a moose', according to one very startled eyewitness, a young carpenter) and were always associated with water. When their habitat suffered a great drought some time before 1820 that dried out many streams and wells, and suffered additional devastation with a terrible fire, the outcome was their extinction. If we equate these animals' 'horns' with prominent, branching external gills, rather like those of the much smaller axolotl of Mexico, these 'pink lizards' could indeed have been larval salamanders – but their size far exceeds any known species in North America, or anywhere else.

Nature writer Herbert Sass was a much more recent observer of a pink mystery beast in North America. While boating in or around 1928 with his wife Marion on Goose Creek lagoon, near Charleston, Sass saw something moving under the water, and when he succeeded in lifting part of its heavy bulk up out of the water on an oar they saw that it was bright salmon-pink and orange in colour, as thick as a man's lower thigh, with a smooth tail, and a pair of short legs like those of an alligator or salamander. Within moments, however, their mysterious captive had slipped off the oar, and back into the water. A 2-ft-long portion of a large worm-like beast of similar coloration to Sass's creature was briefly spied by Ivan Sanderson and his wife Sabina during the early 1970s, amid the dense water vegetation in a pond created from an artificial swamp on their farm at Warren County, New Jersey.

Speculation concerning the existence in North America of giant salamanders might seem just as risky as speculation regarding the presence here of living dinosaurs, were it not for the indisputable fact that the United States is already known to harbour one species of giant salamander – the euphoniously named hellbender *Cryptobranchus alleganiensis*. Up to 29 in long, it is most closely related to a pair of even larger species, native to Asia's Far East, the Chinese giant salamander *Megalobatrachus davidianus* (up to 4½ ft long), and the Japanese *M. japonicus* (at up to 5½ ft long, the world's biggest salamander).

Chinese giant salamander Megalobatrachus – *does North America harbour an undiscovered relative?*

It is interesting to note that in his own report of his sighting, Sass described the creature that he briefly captured as a kind of giant hellbender, at least 5–6 ft long, because this grotesque species is also reminiscent of Pinky from Florida's St Johns River. Just like Pinky, the hellbender has a large flattened head, a long downward-curving mouth, loose folds of skin on its neck, and wrinkles along much of its body that could conceivably be mistaken for protruding bones during as brief a sighting as that of 10 May 1975. Moreover, the hellbender does indeed inhabit fast-flowing streams and rivers, and even in their well-aerated water it must still surface to gulp air every so often, because unlike various other salamanders it does not have external gills as an adult. With a life-span for this species of at least 30 years, a single specimen could have been responsible not only for the Pinky sighting of May 1975 but also for those pre-dating it by more than 20 years.

Even its dissimilarities are not irreconcilable. Although the hellbender's official distribution range is from the Great Lakes through the eastern United States to Georgia and Louisiana, it would not be impossible for a population to remain undetected amid the little-traversed Florida swamplands.

Interestingly, the concept of out-of-place giant salamanders has at least two notable if somewhat controversial precedents. In or around 1939, a 25–30-in-long *Megalobatrachus* salamander was captured by a commercial fisherman in California's Sacramento River. Maintained alive for a time within a wooden trough suspended in the fisherman's own bathtub, it was examined by Stanford University herpetologist Dr George S. Myers, who felt that it differed in coloration from both of the two known species of *Megalobatrachus*. He speculated that, although it could simply be an escapee from captivity, it may represent an unknown, native New World species – a relic from prehistoric times, when the zoogeographical range of the giant salamanders was much greater than its fragmented, modern-day equivalent.

This latter identity, however, was challenged by Chico State College herpetologist Dr Thomas L. Rodgers, who announced that he too had inspected the Sacramento giant salamander, but had later learnt that it was in reality an absconded Chinese giant salamander called Benny – one of three *M. davidianus* specimens purchased by fish fancier Wong Hong somewhere in China. According to Charles Bjork, captain of the steamer *Isleton*, Benny had escaped while being transported through the straits on the way to Stockton Harbour.

Even so, this does not explain the sighting of what was described by eyewitnesses as the 'head of a gigantic lizard' emerging from the Sacramento River in 1891. Nor can it counter the longstanding belief that a deep lake in California's Trinity Alps is home to giant salamanders 5–9 ft long. Attorney Frank L. Griffith claimed to have spied five of them and even to have hooked one in the 1920s. Due to its great size, however, he was unable to haul it out of the water. His story attracted Dr Rodgers's interest, who visited the lake four times hoping to see these beasts. Despite denouncing Myers's idea regarding the Sacramento specimen, he speculated that they may be a relict population of *Megalobatrachus*, but all that he found were some *Dicamptodon* salamanders – none more than 1 ft long.

Other searches have taken place since then, whose participants included in 1960 the Texan millionaire Tom Slick, a keen amateur cryptozoological investigator, but as no specimen of *Megalobatrachus* or the hellbender has so far been found here, the case for their existence remains unproven. Yet in view of its secretive, principally nocturnal lifestyle, it would not be too surprising for populations of hellbenders outside the species' known distribution range to have escaped detection, especially in little-explored swamps or high mountain lakes.

The extra large size of some of North America's unidentified salamander-like beasts (pink or otherwise) is not a problem either, when seeking to identify them as hellbenders. Although the largest recorded specimens are under 3 ft, formerly there may have been much larger ones, whose greater size offered them up as targets for early western settlers eager to test their shooting capabilities upon these inoffensive, sluggish beasts. Record-size specimens of many different species have elicited similar attention from hunters in the past, the systematic killing of such specimens bringing about an eventual decrease in their species' average size (the gradual reduction in average total length of the much-hunted European giant catfish or wels *Silurus glanis* over the past century exemplifies this trend). In remote areas little frequented by man, however, some reclusive giant specimens could still thrive, undisturbed.

Even the distinctive pink colour of most of the strange creatures reported here does not oppose a hellbender identity. Albinism is not uncommon among salamanders, and albinistic specimens normally exhibit a pink sheen due to the presence of blood coursing through their blood vessels beneath the outer skin layer. In the hellbender, the skin's supply of blood vessels is particularly pronounced; this extensive vascularization enables the animal to obtain much of its oxygen requirements by direct absorption through its skin from the surrounding water of its aquatic domain. Hence an albinistic hellbender would be conspicuously pink. And because the genetics of albinism in salamanders (as in many other animals) are such that albino salamanders can only yield more albinos, all-pink populations would rapidly arise.

In contrast, Mark Hall mentioned that the pink colour of these mystery beasts could be due to their diet, as with the pink plumage of flamingos. Flamingos, however, are a very special case, and there is no evidence to suggest that a similar phenomenon occurs in salamanders – even when pet albino axolotls, for example, are fed upon bright red tubifex worms and various pink crustaceans, they never acquire the pigmentation of their prey.

Overall, therefore, a hellbender identity for the pink mystery beasts is the most satisfactory explanation available. Even so, there is still the matter of the Scippo Creek beasts' bizarre moose-like horns to resolve, because hellbenders have no such structures – when adult, even their gills are internal. Consequently, if the Scippo creatures' 'horns' are

actually large external gills these animals would much more closely resemble a giant form of axolotl – the famous neotenic larval form of the Mexican tiger salamander. Under standard conditions, this species metamorphoses normally from the gilled larval salamander to the true adult reproductive form. If the pools in which it thrives are low in iodine, however, this metamorphosis is halted, and the salamander retains its larval form throughout its life, but nonetheless acquires the capability to reproduce and is thus said to be neotenic.

A neotenic, extra-large version of the hellbender might thus explain the pink mystery beasts of Scippo, but no such specimens have so far been formally documented. Moreover, not only are neotenic salamanders exclusively aquatic, but if they are lifted out of the water their gills flatten against their neck, thereby losing their antler-like form.

And in any case, what of Pinky – with its very different, snail-like horns, and noticeably large eyes? Hellbenders have no such horns, and their eyes are very small. Could Pinky's horns be breathing tubes? If so, a hellbender with snorkels and protruding eyes is clearly taxonomically separate from the known species – so although a thriving *Thescelosaurus* abroad in North America remains highly unlikely, the possibility of an unknown species of giant salamander lurking amid its vast swamplands may be worth further investigation.

The tantalizing tyrannosaur of Hava Supai

Cave paintings of a sauropod in darkest Africa may be one thing, but the ancient depiction of a tyrannosaur in an Arizona canyon is another matter entirely – which is why the following case has generated so much interest, and controversy, over the years.

In 1924, the Doheny Archaeological Expedition, led by Dr Samuel Hubbard from California's Oakland Museum, made a remarkable discovery in the Hava Supai canyon of northern Arizona. Incised in the solid rock at the canyon's gorge were some ancient carvings, one of which seemed to bear more than a passing resemblance to the side-on outline of a bipedal dinosaur! Most publications documenting this remarkable intaglio liken it to a tyrannosaur standing erect on its long hind legs and supported by its tail (but Brian Newton in *Monsters and Men* favours a dome-crested hadrosaur called *Corythosaurus*), equipped with noticeable jaws, a fairly long neck, and stout body.

The carving is not particularly large – the 'dinosaur' stands 11.2 in tall, with a 3.8 in long hind limb, and a 9.1-in-long tail. Nevertheless, it is certainly eyecatching because its outline is bright red, which yields a striking contrast with the black background colour. The black background is in reality a glossy varnish-like substance, produced by gas that gradually seeped through the canyon's sandstone and coated its outermost layer. The red outline of the carving itself is iron oxide – normally concealed beneath the sandstone's surface but exposed in the grooves of the carving.

This enigmatic petroglyph has been offered up as evidence for all sorts of radical ideas – ranging from the suggestion that a race of tyrannosaurs somehow survived right up to the time of man's entry into the New World, to the notion that man is far older than evolutionists have claimed and was actually alive at the time of the dinosaurs back in the Cretaceous. To my mind, however, even if the carving does depict a dinosaur (and I am far from convinced about this), there is a much simpler explanation than either of those above.

Life-sized reconstruction of Protoceratops*: inspiration for the griffin legends? (Dr Karl P.N. Shuker/reproduction courtesy of Drayton Manor Park & Zoo)*

Early man certainly encountered fossils, and was undoubtedly curious to know what they were. When a near-complete skeleton was visible, it would have been tempting to try to reconstruct its appearance in life, and the Hava Supai carving may have been one such attempt, undertaken by an artist after seeing the partially exposed skeleton of a tyrannosaur or

some other bipedal dinosaur, or after receiving its description from someone else.

Plausible precedents for such a situation are not unknown. In 1991, Princeton classical scholar Dr Adrienne Mayor suggested that legends concerning those fabulous lion-bodied, eagle-headed beasts known as griffins may have been influenced by early gold prospectors in central Asia's Altai Mountains encountering exposed, fossilized skeletons and eggs of a Cretaceous dinosaur called *Protoceratops* – a lion-sized quadrupedal beast with an eagle-like beaked head. And back in 1916, J. O'Malley Irwin entertained similar ideas linking the Chinese dragon's origin with discoveries of Oriental sauropod fossils.

Anachronisms from Acámbaro, Ica, and elsewhere

Controversial pre-Columbian portraits of dinosaur-like beasts in the New World are not confined to the canyon of Hava Supai, as can be seen by the following examples. A strange creature resembling a somewhat long-limbed sauropod is one of several images carved into a strange granitic statuette nowadays termed the Granby Stone. Measuring 14 in high, it was dug up from a depth of 6 ft in 1920 by some ranch hands working on the William M. Chalmers estate near Granby in Colorado. The statuette has since been lost, but some good-quality photos still survive. Even more curious than this supposed sauropod image is one that experts claim to be of a stylized human figure – bearing on his chest an ancient Chinese inscription, believed to date back to around 1000 BC.

Equally odd is the leaden sword found with other objects in a lime kiln near Tucson, Arizona, in 1925 – for a sauropod-like beast is inscribed across over half of its blade's length. Inscriptions on some of the other objects imply a Roman–Judaic origin – so how can their burial in an Arizona desert (let alone the sword's depicted dinosaur) be explained?

Between 1945 and 1952, Danish storekeeper Waldemar Julsrud and other locals unearthed a vast cache of exotic-looking figurines – numbering some 32,000 and variously composed of jade, obsidian, ceramic, and stone – at Acámbaro, in the Mexican state of Guanajuato. Whereas many represent typical animals of that region, others appear to be wholly unknown beasts, and some are faithful renditions of such prehistoric stalwarts as sauropods and *Camelops*, America's single-humped camel, believed extinct since the Pleistocene. When Professor Charles Hapgood sent some of the figurines to a New Jersey laboratory in 1968 for radiocarbon dating, the results obtained suggested dates ranging from 5430 BC to 1640 BC – none of which are consistent with the general opinion in archaeological circles that the figurines are modern-day fakes.

In March 1988, a *Nueva Acrópolis Revista* paper by Spanish archaeologist Professor Jorge A. Livraga Rizzi described his discovery in western Guatemala of several small, ceramic animal heads bearing more than a passing resemblance to those of certain famous dinosaurs, including *Tyrannosaurus*, and the hadrosaurs *Corythosaurus* and *Anatosaurus*. Laboratory analyses have yielded an age of 3,000 years or so for them – if correct, they were clearly not influenced by modern-day dinosaur memorabilia or depictions.

During this century, the jungle caves of Cuenca in Ecuador have offered up hundreds of exquisite artefacts, including many gold pieces. Securely held within the Church of Maria Auxiliadora, where they have been personally cared for by one of its priests, Father Carlo Crespi, some depict Egyptian and Assyrian motifs, and one – a baked clay tablet – bears upon its surface an excellent portrait of a sauropod.

The most notable, and notorious, series of anachronistic illustrations in the New World, however, is unquestionably the enormous collection of decorated stones obtained by anthropologist/surgeon Dr Javier Cabrera, from Ica, Peru, and from the Ocucaje Indians. Numbering in excess of 20,000, ranging greatly in size, and occupying an entire museum devoted to their extraordinary depictions, these stones were first unearthed in 1955, and bear an unparalleled selection of inexplicable images. Dinosaurs of many different types can be clearly discerned – brontosaurs, tyrannosaurs, stegosaurs – as well as long-extinct sea lizards called tylosaurs, pterodactyl-like beasts being ridden by humans, and even (in the opinion of Cabrera) advanced techniques in surgery such as heart transplants!

Hardly surprisingly, most archaeologists have expressed grave doubts as to their authenticity, and Cabrera himself is well aware that his own interest in these items has stimulated a number of enterprising local artists to create their own versions in the hope that he will purchase these too. Cabrera, however, claims that he can readily distinguish the ancient originals from modern-day versions. Moreover, after submitting some of the ancient examples to the Mauricio Hochschild Mining Company in Lima for formal examination, the report that he received back in June 1976 from company geologist Dr Eric Wolf revealed that the stones and the grooves of the depictions upon them were covered in a fine

but natural oxidation film – implying that stones and depictions alike were of a very great age.

How can all of these iconographical enigmas be explained? The various tests performed upon samples of them seem to dismiss hoaxes as a comprehensive answer to their existence. If, then, they are as old as the tests indicate, only two answers appear to remain. Either the depictions were based upon *living* dinosaurs that have somehow survived into modern times undetected by science, or they were created by artists inordinately well versed in interpreting the likely appearance in life of animals whose fossils they occasionally encountered.

Where 'nothin' would surprise' – monstrous reports from South America

In Sir Arthur Conan Doyle's novel *The Lost World*, the formidable if fictitious Professor Challenger acknowledged that in the vast Mato Grosso area of Brazil and elsewhere amid the scarcely penetrable rainforests and mountainlands of South America '. . . nothin' would surprise' – a sentiment expressed by many scientists in the real world too. But does this optimism extend to the prospect of living dinosaurs?

Strangely, despite the environmental potential for such creatures (as expressed at some length during the 1970s, for example, by Dr Silvano Lorenzoni in the magazine *Pursuit*), South America has not attracted a fraction of the cryptozoological interest that has been focused upon such issues in Africa. Consequently, reports on file tend to be fewer in number and less precise in description. Also, whereas Africa's putative dinosaurs fall into certain well-defined morphological categories, South America's are far more diverse and ill defined.

For instance, every so often a distressingly vague account describing giant amphibious reptiles emerges from this continent's immense north-western section, and over the years all manner of identities have been put forward. Some beasts, with relatively short necks, have been likened to various ornithopod dinosaurs, such as hadrosaurs or iguanodonts – like the supposed *Iguanodon* reported in Colombia's Magdalena river during 1921. The similarities are slight at best – at worst, they are non-existent.

This is readily demonstrated by considering the beast spied in or around 1931 by Swedish explorer Harald Westin. While travelling down the Marmore River in Brazil's vast Mato Grosso, he spied a most peculiar animal walking along its shore. Greyish in colour, about 20 ft long, with a head like an enlarged alligator's, it reminded him a little of a distended boa constrictor – but, unlike any boa constrictor, it possessed four lizard-like feet, and its small eyes glowed scarlet as it raised its reptilian head to look at him. Taking fright at encountering a veritable monster in such close proximity, Westin shot it – but apart from making a clucking sound as it hit its target, the bullet apparently had no effect at all. Instead, the creature simply continued upon its way, seemingly unharmed and undisturbed. Whatever it was, it certainly does not bring to mind images of ornithopods – or of anything else currently known to science, for that matter.

Reports of long-necked reptiles are no easier to deal with either. Unlike the distinctly sauropodian forms on file from Africa, most of South America's versions seem more akin to plesiosaurs, both in terms of appearance and behaviour – a selection of these is presented in the next chapter, which deals with monsters from ancient waters. There are, however, one or two possible exceptions.

When traveller Leonard Clark journeyed up Amazonia's Perene River in 1946, he encountered several tribes of Indians east of the Ucayali who described to him gigantic long-necked beasts of plant-eating persuasion that recalled the giant sauropod *Diplodocus*.

In 1975, while holidaying in the Amazon, a Geneva businessman (name unknown) met Sebastian Bastos – a 75-year-old guide who, by a lucky coincidence, had been educated in Switzerland and was therefore able to converse fluently with him. During one conversation, Bastos reluctantly revealed that not only were there areas of this vast jungleland that harboured enormous long-necked monsters, but he had once almost been killed by one!

Several years earlier, after beaching his canoe by a river deep within the rainforest during a period when the water level was exceptionally low, Bastos had been walking alongside it towards an Indian friend whom he had arranged to meet there, when suddenly he heard a tremendous noise behind him. Looking round, he saw to his horror that an enormous monster had risen from the water, and was in the process of ripping his boat apart. As the two terrified men ran away, they briefly looked back to see if the creature was following them, but saw to their great relief that it had resubmerged beneath the surface. According to some of Bastos's Indian acquaintances, beasts of this type frequented certain deep water holes in the jungle's heartlands, and occasionally came out on to land at night. Their heads, necks, and backs were about 18 ft long, and the Indians took great pains to avoid them.

There are native accounts on file from Africa that tell of *mokele-mbembes* destroying boats. Such creatures are of similar size to Bastos's beast, and they do appear to venture on to land at rare intervals. Even so, there is insufficient detail in Bastos's account to discount entirely a plesiosaur identity from consideration.

Even vaguer is a reference in *Exploration Fawcett* (1953) by lost explorer Colonel Percy Fawcett – alluding to still-unfamiliar beasts in the forests of Bolivia's Madidi, he notes:

> . . . some mysterious and enormous beast has frequently been disturbed in the swamps – possibly a primeval monster like those reported in other parts of the continent. Certainly tracks have been found belonging to no known animal – huge tracks, far greater than could have been made by any species we know.

The mention of tracks suggests footprints – which favour dinosaurs over flippered plesiosaurs – but little else can be deduced from such a brief description.

Sometimes, however, the more detail available, the more bewildering the situation becomes – and few cases illustrate this more effectively than that of another reptilian monster from Bolivia, meticulously documented in one of the USA's most prestigious journals, *Scientific American*. The account, published in 1883, is so astonishing that it bears quoting in full:

> The Brazilian Minister at La Paz, Bolivia, has remitted to the Minister of Foreign Affairs in Rio photographs of drawings of an extraordinary saurian killed on the Beni after receiving thirty-six balls. By order of the President of Bolivia the dried body, which had been preserved in Asuncion, was sent to La Paz. It is twelve meters long from snout to point of the tail, which latter is flattened. Besides the anterior head, it has, four meters behind, two small but completely formed heads(?) rising from the back. All three have much resemblance to the head of a dog. The legs are short, and end in formidable claws. The legs, belly, and lower part of the throat appear defended by a kind of scale armor, and all the back is protected by a still thicker and double cuirass, starting from behind the ears of the anterior head, and continuing to the tail. The neck is long, and the belly large and almost dragging on the ground. Professor Gilveti, who examined the beast, thinks it is not a monster, but a member of a rare or almost lost species, as the Indians in some parts of Bolivia use small earthen vases of identical shape, and probably copied from nature.

The only creature in any way reminiscent of Gilveti's triple-headed horror is a beast drawn from the darkest recesses of Greek mythology – nothing less, in fact, than Cerberus, the monstrous three-headed hound of Hades that guards the entrance to the Underworld!

Closing this selection of reports from South America is one of the most dramatic on record. In October 1907, a German traveller called Franz Herrmann Schmidt journeyed up Colombia's Solimoes River with Captain Rudolph Pfleng, reaching a remote region of swamps and jungle valleys – and ultimately encountering a long-necked monster of uncommonly intriguing appearance. It was the twelfth day of their expedition, and after arriving in a long valley that had become a shallow lake they spied some huge tracks on its shore.

After paddling across the lake to reach them, the travellers inspected the tracks and concluded that they were the impressions left behind by a huge animal the size of an elephant or hippo, leaving and then re-entering the lake. At one site, three tracks were found together – one large, the other two only half the size, as if an adult and two youngsters had been there together. They also noticed that great quantities of vegetation had been torn down, some from a height of 14 ft above the ground. Something appeared to have been browsing – and the next morning the two explorers and their Indian helpers found out what it was.

That day, they had come upon a muddy track, one indicating something leaving and then re-entering the water, and so fresh that it was still wet. Suddenly, some monkeys in the forest nearby began to shriek, and the frightened men sitting in their boat were just able to discern a dark shadow shoot up among them before one of the Indians began paddling away as fast as he could. In moments, they were about 100 ft away from the shore – which was probably no bad thing, for as they looked back they saw a barrel-sized head rise up over some 10-ft-tall bushes on a long snake-like neck.

Its eyes were small, and it possessed a tapir-like snout, but although it moved towards them the creature did not seem alarmed by their presence. As it gradually emerged from among the foliage, they could see that it was 8–9 ft tall at the shoulders, but instead of possessing fully formed forelegs and feet it was equipped with a pair of massive flippers. Unlike those of plesiosaurs, however, these bore claws.

Although it did not appear aggressive, Pfleng decided that he was taking no chances with such a behemoth of a beast, so he began shooting at it, and Schmidt swiftly followed his lead. Yet although several bullets hit it, none seemed to have any effect – other than to induce the great creature to leave the forest and dive into the water – briefly revealing a heavy blunt tail furnished with rough horny lumps. Its head remained visible above the surface, and during its swift progression from land to lake its total length was estimated by the travellers to be 35 ft, of which at least 12 ft comprised the head and neck.

After carefully checking this astonishing account, Professor Roy Mackal is inclined to accept it as authentic. Even so, what can we say about a creature that seems unable to decide whether it is a sauropod or a plesiosaur, tantalizingly combining the former's overall form and plant-eating habit with the flippered forelimbs of the latter?

I hesitate to suggest that it could have been anything as radical as a highly evolved sauropod whose limbs were in the process of transforming into flippers, just as those of plesiosaurs, cetaceans, ichthyosaurs, and various other aquatic animals had done at some stage during their evolution – but such an identity would fit the bill very satisfactorily.

Mongoon-galli and *Megalania*

Although several types of mysterious giant reptile have been reported from New Guinea, none seems destined to join the ranks of prehistoric survivors. The six-legged snakes reputedly inhabiting a mountain on the island of Waigeu (west of New Guinea), for instance, owe more to mythology than to Methuselah. The dinosaurian *row*, allegedly encountered in New Guinea's Sterren Mountains by Charles Miller and wife during their honeymoon in the 1940s, was dismissed long ago by Heuvelmans as a highly improbable, composite creation – implausibly combining characteristics from several totally unrelated dinosaur lineages.

And the capture of a young specimen in 1980 during 'Operation Drake', led by Colonel John Blashford-Snell, revealed that reports of a dragonesque Papuan beast called the *artrellia* were based merely upon oversized specimens of Salvadori's monitor *Varanus salvadorii*.

Giant monitors have also been reported from many eastern portions of mainland Australia. Yet, whereas those of New Guinea belong to a known, modern-day species, their Australian counterparts are believed by some to be bona fide prehistoric survivors – belonging to a giant species thought to have died out long ago.

A particularly important sighting took place in early 1979, because this was when one of these monstrous mainland lizards made itself known to a professional herpetologist. After a day of conducting field research deep amid the Wattagan mountains of New South Wales, Frank Gordon had climbed back into his Landrover, parked next to a 6-ft-high embankment, when he saw what looked like a large log lying on top of the embankment – and then, as he started his vehicle's engine, the log moved! As Gordon stared in amazement, the 'log' revealed itself to be an immense monitor lizard, far longer than his 17-ft-long Landrover, which scuttled away into the nearby forest on four powerful legs, leaving behind a stunned herpetologist who estimated the creature's total length at 27–30 ft.

Gordon was not the first person to record seeing such creatures here – eyewitness accounts of giant monitors in the Wattagans date back at least as far as 1830, when these mountains were reached by the first cedar timber cutters of European descent. Reports have also emerged quite regularly from New South Wales's even more remote Wallangambie Wilderness – where a lorry driver came to an abrupt halt one night in early 1980 when a 20-ft monitor stepped out in front of him as he was driving along the Bilpin Road on the wilderness's southern border. In the swampier portions of northern New South Wales, such creatures are well known to the aboriginals, who call them the *mungoon-galli*. It is likely that these are also responsible for the anomalous reports of 'crocodiles' periodically sighted in this state's forests – an unlikely setting for genuine crocodiles.

Nor are descriptions of giant monitors confined to New South Wales; precisely the same type of reptile is spasmodically recorded from the terrain surrounding Lake Alexandrina in Victoria, and also from the forests of northern Queensland. This latter locality saw the arrival in June 1978 of a monitor-seeking expedition led by a cryptozoological investigator with a strong interest in these mystery beasts – Rex Gilroy, curator of the Mount York Natural History Museum in New South Wales. He chose to explore the Atherton Range, and although he made no sightings himself, he amassed a sizeable file of accounts from the area's farmers, who claim that such goliaths are relatively common amid the mountains' more remote, inaccessible stretches, and in some cases attain lengths of up to 15–20 ft. Such dimensions are considerably greater than those of any known species of monitor Down Under.

So what could they be? A conservative identity would be Salvadori's monitor of New Guinea, the world's longest lizard with a known maximum length of 15 ft, but it is not on record from Australia. Even so, it is not unprecedented for a New Guinea monitor to exist undetected by science in Australia. In 1980, Dr Gregory Czechura from the Queensland Museum disclosed the presence in Queensland's Cape York Peninsula of the emerald monitor *Varanus prasinus*, hitherto known only from New Guinea and selected adjacent islands.

True, with an average total length of under 3 ft it would experience less difficulty in remaining undiscovered than would a colossal species that may grow up to 30 ft (bearing in mind certain *artrellia* reports), but some of the localities from which these giant beasts have been recorded are so little explored that such an eventuality is not impossible.

Rex Gilroy, however, supports an even more thought-provoking theory – suggesting that Australia's giant monitors are surviving representatives of a gargantuan Antipodean species called *Megalania prisca*, officially believed to have died out around one million years ago. The largest meat-eater of Australia's Pleistocene epoch, this mighty reptile probably preyed upon huge, herbivorous marsupials called diprotodonts (p. 139). Based upon estimates obtained from fossil reconstructions, it may well have grown to a length of about 20 ft, with a mass of 1320–1360 lb – nearly eight times the mass of the modern-day Komodo dragon.

Until very recently, there is little doubt that a living *Megalania* would have satisfactorily explained the sightings of giant monitors in eastern Australia – but then came a highly unexpected revelation. In 1990, Queensland Museum's fossil reptile specialist,

Is there a giant species of prehistoric monitor lizard surviving in Australia?

Dr Ralph Molnar, announced that some newly documented cranial portions from a Pleistocene *Megalania* unearthed in this state's Darling Downs site revealed that the specimen in question had possessed a sagittal crest. That is to say, an external ridge of bone ran along the top of its skull, from front to back, and when present in other species such a ridge normally supports (in the living animal) a crest of skin, as in various present-day iguanas.

Yet there do not appear to be any reports on file that describe modern-day encounters with *crested* giant monitors in Australia, which would seem to argue against *Megalania* as their identity – unless, that is, the crest was a feature of one sex only, and that the sex lacking the crest was the one usually seen by the farmers.

Another reason for not entirely dismissing the identification of Australia's unidentified giant monitors as a modern-day *Megalania* is Molnar's speculation that as living species of lizards with a sagittal crest are often amphibious, so too may have been *Megalania*. For in addition to accounts of terrestrial giant monitors, there are also reports of gigantic freshwater counterparts, inhabiting several tropical lakes and rivers in eastern Australia.

Crested or otherwise, *Megalania* still seems to offer the most plausible solution to the reptilian giants of Australia. Even so, the issue cannot be resolved until a specimen is captured and identified – but how to accomplish this? Australian cryptozoologists would greatly welcome details from anyone with a promising plan!

A final Australian anomaly worthy of brief mention is the *gauarge*. According to Gilbert Whitley's survey of Antipodean mystery beasts, this is a variation of the aboriginal rainbow serpent, and is said to resemble a featherless emu that sucks down in a whirlpool anyone daring to bathe in one of its water holes. As Heuvelmans noted, a featherless emu is a good description of some of the bird-mimicking dinosaurs, such as *Struthiomimus* ('ostrich-mimic'), but these were terrestrial, cursorial forms, with no aquatic adaptations – and if any aquatic version had evolved, it would not resemble a featherless emu.

Post-Cretaceous dinosaur fossils?

The concept of present-day dinosaur survival would become considerably more palatable even to the most hardline sceptic if there were some fossil evidence for post-Cretaceous dinosaur survival. This would, however, contradict the ostensibly inviolate maxim that all dinosaurs had perished by the close of the Mesozoic Era – which is why, while researching the present book, I was both delighted and surprised to discover that some such evidence does exist.

In 1977, Chicago University evolutionary researcher Dr Leigh Van Valen and Minnesota University geologist Dr Robert E. Sloan queried the traditional view that the mass reptilian extinctions on land and in the seas at the end of the Cretaceous were contemporaneous, by offering evidence that some southern-based terrestrial extinctions occurred later than northern-based ones. This gained momentum in 1984, when Panjab University palaeobiologist Professor Ashok Sahni pointed out that the Takli Formation, traditionally deemed to be of Palaeocene age (55–64 million years old), contained titanosaurid fossils. Consequently, either the formation's age was incorrect (and there seemed to be no evidence to indicate this) or in India these sauropods had persisted beyond the Cretaceous into the Palaeocene epoch.

More recently, in a *Science* paper of 2 May 1986, Van Valen, Sloan, and other colleagues revealed that data from a variety of different locations in addition to India, such as the Pyrenees, Peru, New Mexico, and Montana, suggest that dinosaurs survived well into the early Palaeocene within the tropics. The Montana evidence stems from the Hell Creek Formation, which contains a channel sandstone whose upper level (Ferguson Ranch) is 1½ yards above the local K/T (Cretaceous–Tertiary) boundary, and contains not only some mammalian teeth, but also Palaeocene pollen and the teeth of seven different genera of dinosaur.

The big issue here is whether the dinosaur teeth were genuine members of the Ferguson Ranch sediment (and therefore truly of post-Cretaceous age), or reworked from older sediments. Van Valen and colleagues supported the former possibility, first of all because the teeth had not been transported very far – post-mortem stream abrasion on them was minimal. Moreover, the hollow cavity at the base of these teeth is empty or filled only with channel sand, not with floodplain silts or clay, as would be expected if they had entered the Ferguson Ranch sediment due to erosion of floodplain sediments adjacent to this channel.

As they also point out, it is even less feasible that they were eroded from older channel sands, because the usual occurrence in channel sands is near the sand's base – and the Ferguson Ranch channel is not cut deeply enough into lower channels to rework many teeth. Lastly, but of particular importance is the absence within the Ferguson channel of any species belonging to the Cretaceous genera *Baioconodon* and *Oxyprimus* – for these are far more numerous than

the dinosaur teeth in the only channels from which the latter could have originated if reworked. As the researchers concede, the most reasonable conclusion from all of this is that these are indeed early Palaeocene dinosaurs.

As noted at the beginning of this chapter, the mere concept of any type of dinosaur surviving into the present day is one that has provoked cynical disbelief within the more conservative corners of the scientific establishment. If after having reached its close, there are still some readers who will not concede that such a possibility (however faint) does exist, I can do nothing more than recall to them the following words of Captain William Hichens – in a *Chambers's Journal* article (1 October 1927), 'On the Trail of the Brontosaurus and Co.':

> The level-headed man at home will be tempted to exclaim, 'But this is rubbish, this talk of undiscovered monsters.' So at first thought it may seem; but it must be borne in mind that such an obvious animal as the okapi, a beast that looks as though it had escaped from a jigsaw zoo, remained undiscovered up till the beginning of the present century, when Sir Harry Johnston startled the scientific world by sending home the skin and skeleton of one. Scientists gasped: this cannot be, they said. They said the same about the man who first reported the giraffe; in fact, they tortured him for a downright romancer of the worst description. But there were children feeding giraffes in the London Zoo this week!

Even the most die-hard sceptic would be hard pressed to disagree with that!

STOP PRESS

DURING THE 1980s, two Japanese expeditions also visited the Likouala swamps in search of the *mokele-mbembe*. The first of these took place in September 1987, and included Hideyuki Takano and Tohru Mukai from the Waseda University Expedition Club, together with Dr Marcellin Agnagna and D'jose D'jonnie as Congolese advisers. The team visited Epéna, Boha, Dzeke, Minganga, Mokengui, and the Mondongouma River.

The second Japanese expedition, an 11-strong team led by Takano but also including Agnagna and Tokuharu Takabayashi, arrived at Brazzaville on 10 March 1988, leaving 12 days later for the northern Likouala region, and arriving via Epéna at Lake Tele on 30 March. Here the team spent the next 35 days, before returning to Brazzaville. Despite daylight surface surveillance with telephoto-equipped cameras, all-night surface surveillance with a Starlight scope, and sonar scans from a rubber boat, no first-hand evidence for the *mokele-mbembe* was obtained by the team. During this period, however, two Boha villagers claimed to have spied a large black unidentified object floating at the lake's centre, and a great deal of anecdotal evidence was collected from other villagers.

According to media reports from early 1995, a party of geology students investigating quartz deposits in the Sinorca Mountain range of eastern Brazil had lately spied two strange dinosaur-like creatures bathing in the shallows of the Paraguaçu River as it passed through the plain of Orobo. According to eyewitnesses, the creatures were each around 30 ft in total length, with a huge body, fearsome head, a long neck measuring approximately 6 ft, and an 8-ft tail.

This recent report acquires additional importance in the light of a very notable account that I uncovered in June 1995. Published in London's *Daily Mail* on 17 December 191, it comprises a letter written by the famous lost explorer Colonel Percy Fawcett. The relevant portion is as follows:

> The Congo swamps are not the only region suspected of harbouring relics of the Miocene age.
>
> As I hinted in lectures in London some years ago, a similar beast is believed to exist in South American swamps. A friend of mine, a trader in the rivers and for whose honesty I can vouch, saw in somewhere about Lat. 12. S and Long. 65 W. [Bolivia–Brazil borderland] the head and neck of a huge reptile of the character of the brontosaurus. It was a question of who was scared most, for it precipitately withdrew, with a plunging which suggested an enormous bulk. The savages appear to be familiar with the existence and tracks of the beast, although I have never come across any of the latter myself . . .
>
> These swamps over immense areas are virtually impenetrable. The 'linguin' of Borneo, again reported a few months ago, is another such reptile as to whose existence there is locally no doubt entertained.

Not previously featured in a cryptozoological work this account – in view of its author – is a particularly welcome addition to South America's sparse file on putative living dinosaurs.

Things With Wings –
from Pterosaurs to Teratorns

When in Northern Rhodesia I heard of a mythical beast . . . which intrigued me considerably. It was said to haunt formerly, and perhaps still to haunt, a dense, swampy forest region in the neighbourhood of the Angola and Congo borders. To look upon it . . . is death. But the most amazing feature of this mystery beast is its suggested identity with a creature bat- and bird-like in form on a gigantic scale strangely reminiscent of the prehistoric pterodactyl. From where does the primitive African derive such a fanciful idea?

Captain Charles R.S. Pitman, *A Game Warden Takes Stock*

He was hitting at it with his fists. If he hadn't, it never would have dropped him.

Ruth Lowe, concerning her son's abduction by a giant mystery bird, *Chicago Daily News* (27 July 1977)

WHEREAS THE dinosaurs reigned supreme on land during the Mesozoic Era, the kingdom of the skies was ruled by the pterosaurs – those flying reptilians of such grotesque appearance that they were described by the French palaeontologist Baron Georges Cuvier as '. . . the result of a diseased imagination rather than the normal forces of nature.'

Like the dinosaurs and crocodiles, the pterosaurs were archosaurs – reptiles possessing a skull containing two large holes or temporal fossae on each side (the diapsid condition) – but were readily distinguished from all others by their many adaptations for flight. These included their membranous wings supported by an immensely elongated fourth finger, hollow limb bones to reduce body weight, and a large keeled breast-bone for attachment of the powerful wing muscles needed for true flapping flight (as opposed to mere gliding).

Pterosaurs had a long slender beak, like some modern birds, but unlike theirs it often contained sharp teeth (though certain genera, for example, *Pteranodon* and *Quetzalcoatlus*, were toothless). Most fed upon fishes and other aquatic fauna, a few snapped up flying insects.

Of particular interest is that, except for their wings, the bodies of some pterosaurs were covered in fur, just like mammals – even though these two groups were quite unrelated. They were almost certainly warm-blooded too. All of this is what one would expect of creatures faced with fulfilling the high energy requirements demanded by flight.

Arising in the Triassic period, pterosaurs comprised two groups. The rhamphorhynchoids were mostly small, with long tails. The pterodactyloids, which arose in the late Jurassic, were larger, but had very short tails. By the onset of the Cretaceous, the rhamphorhynchoids had died out, and after attaining their zenith of diversity during the mid-Cretaceous the pterodactyloids began to diminish in the fossil record too – only a few species survived to the end of the Mesozoic Era, and none persisted beyond it. Or did they?

In places where fossilization is not likely to have occurred or where fossils cannot be readily searched for today – localities such as tropical rainforests and the peaks of high, inaccessible mountain ranges – could there be much more recent pterosaur remains? Could there even be *living* pterosaurs here, aloof from scientific detection and avoided by fearful human neighbours? There is some compelling evidence on file to suggest that there may be much more to such a belief than fanciful speculation.

Also investigated here is the equally startling prospect that science has overlooked some monstrous forms of giant bird, whose one-time reality is again known from fossil evidence – but in this case, only dating back a few thousand years.

And could there be among these high-flying prehistoric survivors a giant species of vampire bat loose in Venezuela, not to mention a couple of avian deities once dismissed as fables in feathers? For these, and other things with wings, read on.

Lizard-birds aloft and whale-heads with wings – unmasking the *kongamato*

As the likeliest land on Earth to harbour living dinosaurs, Africa is surely a promising place to begin any investigation of contemporary pterosaurs – and there are ample reports from tropical Africa to demonstrate that such an assumption is fully warranted.

The subject first attracted serious western attention in 1923, with the publication of a book called *In Witchbound Africa*, written by traveller Frank H. Melland, who had spent some time in charge of native affairs in Zambia (formerly Northern Rhodesia). In his book, Melland spoke of the Kaondé tribe's fervent belief in a terrible winged monster called the *kongamato*, allegedly inhabiting the Jiundu swamp in western Zambia's Mwinilunga District. Upon questioning some of the natives, a remarkable conversation ensued, with some astonishing revelations:

> 'What is the "*Kongamato*"?'
> 'A bird.'
> 'What kind of bird?'
> 'Oh well, it isn't a bird really: it is more like a lizard with membranous wings like a bat.' . . .
>
> Further enquiries disclosed the 'facts' that the wing-spread was from 4 to 7 feet across, that the general colour was red. It was believed to have no feathers but only skin on its body, and was believed to have teeth in its beak: these last two points no one could be sure of, as no one ever saw a *kongamato* close and lived to tell the tale. I sent for two books which I had at my house, containing pictures of pterodactyls, and every native present immediately and unhesitatingly picked it out and identified it as a *kongamato*. Among the natives who did so was a headman (Kanyinga) from the Jiundu country, where the *kongamato* is supposed to be active, and who is a rather wild and quite unsophisticated native.
>
> The natives assert that this flying reptile still exists, and whether this be so or not it seems to me that there is presumptive evidence that it has existed within the memory of man, within comparatively recent days.

This thought-provoking account intrigued Uppsala University palaeontologist Professor Carl Wiman, who sought to explain it away by proposing that the *kongamato* tradition was a product of ethnological 'contamination'. He speculated in 1928 that it had originated from natives who had assisted German palaeontologists unearthing East African pterosaur fossils at Tendagaru, Tanzania, for several years prior to World War I, and who were shown pictures of reconstructed pterosaurs – accounts of which gradually travelled westwards as far as Zambia and were ultimately incorporated within the native folklore of this region.

Melland's information, however, was not the only source from the 1920s that touched upon the possible modern-day survival of pterosaurs in Africa. In 1925, the distinguished English newspaper correspondent G. Ward Price was accompanying the future Duke of Windsor on an official visit to the then Northern and Southern Rhodesias when he received details from a regional civil servant in Southern Rhodesia (now Zimbabwe) concerning a sinister incident that had lately occurred within one of the country's vast, impenetrable swamps. This particular swamp was greatly feared by the natives as an abode of demons, and they claimed that no one venturing inside was ever seen again.

One exceptionally brave native, however, decided to challenge the swamp's terrors and boldly penetrated its depths. He also succeeded in coming out of it alive – but only just, for he returned home with a great wound in his chest. When asked what had happened, the wounded man stated that he had been attacked in the swamp by a huge bird with a long beak – a bird of a type that he had never before seen. Curious to learn more, the civil servant showed the man a book of prehistoric animals, which the latter flicked through in a desultory manner, until he came to the page depicting a pterodactyl. He took one look at this, emitted a bloodcurdling howl of terror, and fled from the civil servant's home.

In 1928, game warden A. Blayney Percival noted that a huge creature whose tracks only revealed two feet and a heavy tail was believed by the Kitui Wakamba natives to fly down to the ground from Mount Kenya at night.

Another game warden, Captain Charles R.S. Pitman, briefly documented in 1942 the existence of a pterodactyl-like creature said to inhabit swampy forests near the Angola–Zaire border, and I have quoted from his account at the beginning of this chapter. It was presumably one and the same as the Jiundu *kongamato* documented by Melland and later repeated in the Royal African Society's journal by Dr Mervyn D.W. Jeffreys in 1943.

In 1956, ichthyologist Professor J.L.B. Smith contributed a thought-provoking snippet from Tanzania. In his book *Old Fourlegs*, he commented:

> The descendants of a missionary who had lived near Mount Kilimanjaro wrote . . . giving a good deal of information about flying-dragons they

believed still to live in those parts. The family had repeatedly heard of them from the natives, and one man had actually seen such a creature in flight close by at night. I did not and do not dispute at least the possibility that some such creature may still exist.

Remembering that Professor Smith was the co-discoverer of the living coelacanth *Latimeria chalumnae* ('Old Fourlegs'), it is neither surprising nor unwarranted that he should be more sympathetic than most scientists regarding the possible existence of anachronistic animals.

Bavarian fossil pterodactyl – is the Zambian kongamato *a living flying reptile?*
(Fortean Picture Library)

It was in 1957, however, that tales of living pterosaurs finally attracted media interest. This was sparked off by the publication of Ward Price's book, *Extra-Special Correspondent*, in which he recounted the incident from 1925 described above, which duly received front-page coverage on 26 March 1957 by Salisbury's premier newspaper, the *Rhodesia Herald*.

Its effect was electrifying, exciting the general public, but exasperating Africa's leading zoologists. On 29 March 1957, the *Herald* published a searing response from Dr Reay Smithers, director of Southern Rhodesia's National Museum, who averred that there was more likelihood of meeting a living specimen of our long-distant African ancestors, the australopithecines, in a city office than there was of encountering a living pterodactyl in an African swamp! This memorable denouncement, however, proved ineffective against the inevitable allure of flying reptiles winging forth from the Mesozoic to modern times – for another enigmatic encounter was swiftly committed to print by the *Herald* on 2 April.

The encounter itself had taken place in January 1956, in the wilds of Northern Rhodesia along the Luapula river, and featured engineer J.P.F. Brown. After a visit to Kasenga in Zaire, he was returning home by car to Salisbury and had reached Fort Rosebery, just to the west of Northern Rhodesia's Lake Bangweulu, when he decided to stop and fetch a thermos flask from his car's boot. It was about 6 o'clock in the evening, and he had just got out of the car when he saw two creatures flying slowly and silently directly overhead. Brown described them as birds that had an incredibly prehistoric appearance. They had a wingspan of 3–3½ ft, a long narrow tail, and a narrow head, rather like a dog with a long muzzle. When one of them opened its beak, Brown saw that it contained a large number of pointed teeth. He estimated the creatures' length from beak-tip to tail-tip at around 4½ ft.

Following this, a Mr and Mrs D. Gregor announced that they had spied some 2½-ft-long flying lizards between Bulawayo and Livingstone in Southern Rhodesia. And Dr J. Blake-Thompson recalled that the Awemba tribe, who live near the source of the great Zambezi river, at the border of Zaire and Northern Rhodesia, claim that huge creatures resembling winged rats inhabit the river gorge caves and fly out of their lairs to attack travellers.

In a *Herald* interview of 5 April, Dr Smithers fielded a sundry selection of identities in a final bid to demystify these sightings and consign the pterosaurian myths back to the prehistoric past.

Brown's things with wings were, in Smithers's view, a pair of shoebills, *Balaeniceps rex*. This peculiar species, with slaty-grey plumage and a short tuft-like crest, has been allied with the storks, the herons, and even the pelicans, but is instantly distinguished from all forms of bird by its grotesque, 8-in-long, hook-tipped beak – variously likened to a clog, an upturned boat, and even the head of a whale (hence *Balaeniceps*).

Shoebills: the explanation for certain reports of pterosaurs in twentieth-century Africa?

Smithers felt that the Gregors' flying lizards were probably big-beaked birds called hornbills, and he deemed the Awemba's giant flying rats to be nothing more startling than a type of gliding rodent called the scalytail, superficially similar (but only distantly related) to the familiar 'flying' squirrels of Eurasia and North America.

In June 1959, however, a magazine called *Le Chasseur Français* published an article by Zoé Spitz-Bombonnel concerning mystery animals, and within this she recorded an incident very pertinent to the pterosaur saga. In 1957, a hospital at Fort Rosebery allegedly received a local African who had a severe wound in his chest. When enquiries were made as to its cause, the man stated that the culprit was a great bird in the Bangweulu swamps. The doctor treating him was so curious about this that he gave the man a crayon and some paper and asked him to sketch his attacker. To everyone's shock, the result was a silhouette that corresponded, feature by feature, with that of a pterodactyl!

Towards the close of the 1950s, *Daily Telegraph* correspondent Ian Colvin briefly referred to the Fort Rosebery attack in a report dealing with the flooding of the Zambezi Valley as a result of the Kariba Dam hydro-electric project. Furthermore, while in the Zambezi Valley at that time, Colvin photographed a controversial creature that one observer believed to be a pterodactyl, and which added one more to the proliferating collection of 'orthodox' candidates already clamouring for acceptance.

In more recent years, attention has switched from East and Central Africa to south-western Africa, specifically Namibia itself, where pterosaur-like beasts as big as Cessna aeroplanes have been reported! They intrigued Professor Roy Mackal so greatly that in summer 1988 he and a party of fellow investigators travelled to Namibia in search of further details – and possible sightings – of these winged wonders. Their focus was an isolated private property, owned by German settlers, in a desert area. After interviewing some of the area's locals, the team was able to describe the creature in question as a featherless beast with a colossal wingspan close to 30 ft, which mainly glided through the air but was capable of true flight too, and was usually spied at dusk, gliding between crevices in two kopjes (hills) about a mile apart.

Despite daily periods of observation, the team was not initially successful, and Mackal eventually returned home to the United States. No sooner had he done so, however, than one of his colleagues, James Kosi, who had stayed on in Namibia, allegedly saw the creature. From a distance of about 1,000 ft, he caught sight of something that he described as a giant glider, principally black, but with white markings.

That, then, is a concise history of Africa's putative pterosaurs – but there are still a number of important points to consider. Take, for example, Wiman's proposal that the Zambian *kongamato* was simply a mythicized recollection of pterosaur reconstructions shown to native helpers at the Tendagaru digs. In reality, however, native belief in this beast apparently dates back far beyond the early years of this century.

In addition, when a verbally transmitted description of anything – let alone beasts so bizarre as pterosaurs – travels distances as great as the many hundreds of miles separating Tendagaru from the Jiundu swamp, it inevitably experiences the 'Chinese whispers' effect. That is to say, it becomes greatly

distorted along the route. Thus, one would have expected the Jiundu version to have been very different from its East African source. Yet descriptions of bat-like birds or flying lizards with long beaks brimming with teeth are very similar all along the route, and have also been gathered to the north and south of it. This suggests that the animal is real, not mythological, and that it occurs over a wide range. Nor does it seem to be a beast created merely to please the enquiring westerners – a not-uncommon practice by native tribes in Africa and elsewhere. Of relevance is an excerpt from Melland's book:

> The evidence for the pterodactyl is that the natives can describe it so accurately, unprompted, and that they all agree about it. There is negative support also in the fact that they said they could not identify any other of the prehistoric monsters which I showed them . . . The natives do not consider it to be an unnatural thing like a *mulombe* [demon], only a very awful thing, like a man-eating lion or rogue elephant, *but infinitely worse.*

Could it be, however, that the natives exaggerate its description (due to their fear of it) so that the result is reminiscent of a pterodactyl, whereas the *real* creature is actually rather less spectacular, and may already be known to science? This was the line of thought pursued by Dr Smithers during the series of articles published by the *Rhodesia Herald.*

Of the various identities that he proposed, the least plausible is certainly the scalytail. Only a couple of feet long at most, and wholly harmless, it is very hard to believe that such a diminutive, diffident animal could have inspired the Awemba natives to dream up monstrous winged beasts that issue forth from caves to attack passing travellers. Their comparison of these anonymous but antagonistic entities to giant flying rats conjures up images of huge bats – and in 1932, zoologists Gerald Russell and Ivan Sanderson actually saw an enormous jet-black bat at close range, skimming across a river in Cameroon, during one of their animal collecting trips. They estimated its wingspan to be a colossal 12 ft – twice that of the world's largest known species.

According to the natives, who greatly feared it, this Brobdingnagian bat is called the *olitiau*. Perhaps, therefore, some purported pterosaur accounts actually feature occasional sightings of an undiscovered species of giant black bat – whose nocturnal activity, dark coloration, and the dread evoked by it among local tribes would ensure that it remained undisturbed and unseen by all but the most tenacious of seekers.

Nevertheless, however large and savage they may be, bats do not have long beaks with which they spear the chests of luckless human trespassers within their marshy realm. If the creature responsible for this is *not* a pterosaur, then we have no option but to look among the birds for a possible contender. Smithers nominated two – a hornbill, and the shoebill. The former, however, is very much a non-starter – apart from their long pointed beaks, hornbills bear scant resemblance to a pterosaur.

In contrast, the shoebill's candidature was enthusiastically received by another notable zoologist, the late Dr Maurice Burton, who discussed its merits as a prospective pterodactyl mimic within the *North Rhodesia Journal* in 1961, and also in *Animals* (18 February 1964). Within this latter account, Burton confidently opined:

> The 'pterodactyls' are, beyond question, shoebill storks, which look reptilian at the best of times and, in flight, can very well be mistaken for pterodactyls, especially by someone who is not on his guard.

This is all very well, but according to 'pterodactyl' eyewitnesses their mystery beasts have teeth and bat-like membranous wings – features singularly lacking in the shoebill. Equally, whereas the shoebill is feathered, the *kongamato* is not supposed to have any feathers at all. In response to these morphological discrepancies, Burton argued that the shock of seeing a creature as grotesque in appearance as the shoebill (especially when revealing its impressive 8-ft wingspan in flight) would be enough for an observer to convince himself that he had seen such distinctly non-avian attributes. I am not at all satisfied by this explanation, however, as I doubt very much that eyewitnesses could unconsciously delude themselves so profoundly, simply through being startled by the sight of an unusual bird.

In an article to accompany Burton's in the *North Rhodesian Journal*, C.W. Benson, a renowned expert on Africa's avifauna, also expressed doubts as to the shoebill's synonymity with the *kongamato*. Recalling the two above-recounted incidents featuring native Africans speared in the chest by a swamp-inhabiting 'bird' with a huge beak and who associated the image of a pterodactyl with their attacker, Benson ruled out a shoebill on the grounds that its beak was not the correct shape to accomplish such a deed, and that its species was not noted for such acts of aggression anyway.

Incidentally, I cannot help but wonder whether those two supposedly separate incidents are really

one and the same. Apart from the actual locations, only the manner in which the pterodactyl identity was aired differs between the two. In the Southern Rhodesian version, the man's terror at seeing the picture of a pterodactyl created the link; in the Northern Rhodesian version, the man sketched a pterodactyl-like beast. The latter reputedly occurred more than 20 years after the former – but was it simply an inaccurately remembered version of it, rather than a separate incident in its own right?

Although acknowledging that shoebills have definitely been sighted at Lake Bangweulu (albeit only rarely), Benson doubted that this species could be responsible for the Jiundu *kongamato*, if only for reasons of habitat – the Jiundu marshes consist principally of swamp-forest and ambatch, which would not be environmentally compatible with *Balaeniceps*.

Benson had even less time for Colvin's photo of a 'pterodactyl' in the Zambezi Valley. According to various ornithologists who had examined it, the photo portrayed a shoebill, but this species is not known from the Zambezi Valley. When Smithers looked at it, however, he felt sure that the creature was really a juvenile specimen of the saddle-billed stork *Ephippiorhynchus senegalensis* – a tall, elegant species with an extremely long, spear-like beak, and which is well known from this area of Africa. True, it is not very pterodactylian in appearance, but its beak might well be capable of inflicting the type of injury suffered by the swamp-invading native hunter(s) further north.

From all of this, the conclusions to be drawn are that, although the shoebill is decidedly strange in appearance, and may perhaps explain one or two pterosaur reports by eyewitnesses unfamiliar with it, the morphology of this species totally conflicts with those detailed native accounts of featherless bat-winged horrors with teeth-crammed beaks – whose Jiundu swampland is equally inconsistent with the shoebill's preferred habitat. As for the saddle-billed stork, although it sports the correct beak for inflicting injuries attributed to the *kongamato* and its kin, the remainder of its morphology is completely different.

It has already been discussed in the first chapter that central Africa has been geologically and climatically stable since the Cretaceous, thereby yielding an environmental haven for 'living fossils' that could conceivably include modern-day descendants of some of the great reptilian lineages from the Mesozoic. And as emphasized by Melland in his book, the Jiundu swamp in particular would be a perfect hideaway for living pterosaurs:

> I must say that the place itself is the very kind of place in which such a reptile might exist, if it is possible anywhere. Some fifty square miles of swamp, formed by an inland delta . . . the Jiundu River spreading out into innumerable channels, and – after receiving several tributaries, reuniting farther down into a single stream of crystal-clear water . . . The whole of the swamp is covered with dense vegetation: big trees that grow to a great height, tangled undergrowth with matted creepers and beautiful ferns. The soil is moist loam and decaying vegetation, the main channels and lesser rivulets being reminiscent of the peat hags [bogs] on a highland moor . . . In one place just to the west of the area there is a big hole resembling a crater. Nowhere else on high, well-drained ground have I seen such a morass: nor could one conjure up a more perfect picture of a haunted forest. If there be a *kongamato* this is indeed an ideal home for it.

There are countless other swamplands of a similarly daunting, impenetrable nature in tropical Africa, including those associated with pterosaur reports. Such creatures, therefore, if they do exist, are not short of effective havens – whose forbidding nature greatly assists in distancing natives who might otherwise grow less fearful of their winged inhabitants, and who may even find their dead bodies before the natural processes of decomposition can begin to take their toll. The natives' terror of the creatures, and the predictable outcome that they refuse to show westerners their habitats, also help to explain the absence of hard evidence supporting the *kongamato*'s existence. After all, if only to see one is death (according to native tradition), it is hardly surprising that the natives do not hunt such animals – or do they?

In 1953, Volume 4 in a series of memoirs entitled *Loin des Sentiers Battus* was published, penned by the Marquis of Chatteleux under his famous pseudonym, 'Stany' – which he used when documenting his varied travels around the world. Regrettably, however, Stany was prone to elaborating those facets of his journeys that were not inordinately exotic – in this particular volume, he claimed not only to have learnt much about the *kongamato* while sojourning in Northern Rhodesia near the Jiundu swamp during 1920–21, but also to have met a woman whose husband Tshipeshi, the village chief, had actually killed the very last three specimens! Heuvelmans places little faith in Stany's account, and notes how like in every detail were his descriptions of the *kongamato* to those in Melland's, published 30

years earlier. Also, sightings of *kongamatos* here and elsewhere long after the early 1920s confirm that they had not been exterminated.

If, therefore, the Zambian *kongamato* and its morphological counterparts in other parts of East and Central Africa do exist, and they really are living pterosaurs, what type(s) could they be? Even though the term 'pterodactyl' is invariably used when referring to such beasts, the pair seen at Fort Rosebery by engineer Brown were relatively small and had long tails, characteristics not of pterodactyloids, but of the more primitive rhamphorhynchoids.

Melland's account does not mention a tail for the Jiundu *kongamato*, but, equally, there is no statement that it doesn't have one. Hence the category of pterosaur involved here is uncertain. As most lizards possess noticeable tails, however, and as native descriptions of the *kongamato* frequently liken it to a winged lizard, it may not be too presumptuous to suppose that the *kongamato* itself has a sizeable tail – which would thus place it within the rhamphorhynchoid category.

With regard to the giant winged beasts of the Namibian desert, their sheer size alone places them unequivocally within the pterodactyloid category. I have deliberately refrained from mentioning these animals to any great extent here, because, whereas their huge size and desert terrain sets them well apart from the moderately proportioned swamp-dwelling forms reported elsewhere in Africa, these same features correspond closely with those described for creatures documented in the next section of this chapter. Hence it would be more logical to deal with the Namibian beasts there, rather than here.

Something that initially seems to set the *kongamatos* and their kin well apart from bona fide pterosaurs is a highly unexpected ability not mentioned here so far. Many natives have claimed that these winged terrors can dive into rivers, plunging directly underwater – only to surface underneath a native boat and capsize its hapless occupants into the water. Indeed, the name *kongamato* is derived from *nkonga-mato*, which translates as 'boat breaker'. Such behaviour hardly calls to mind the ineffably aerial pterosaurs of the Mesozoic.

Yet as far back as 1929, Dr L. Döderlein proposed that some rhamphorhynchoids may have dived down into the water and hunted fishes beneath the surface, rather like modern-day gannets. Even their feet were webbed. The principal problem with this notion is that pterosaurs could not press their wings as close against their bodies as birds can, which means that their large flight membranes may have interfered with their swimming. If the *kongamato* really is a resurrected rhamphorhynchoid, we can only assume that the 144 million years of continuing evolution separating the most recent fossil species on record from the living *kongamato* has satisfactorily dealt with this situation.

The concept of at least one species of twentieth-century pterosaur thriving in the heart of tropical Africa must surely be one of the most thrilling cryptozoological subjects of all time – but the redoubtable combination of inaccessible habitat, superstitious though justified native terror, and aerial aptitude is likely to thwart for a long time to come any westerner hoping to solve the mystery of these secluded swamp-dwellers. Yet until a body, or at least a skull or skeleton, of a *kongamato* can be made available for formal scientific scrutiny, its reality will be rejected and its history discounted as fanciful legend.

In his classic children's book *The Water-Babies*, Charles Kingsley wrote: 'People call them pterodactyls: but that is only because they are ashamed to call them flying dragons, after denying so long that flying dragons could exist.' In view of traditional zoology's current contempt for the *kongamato*, it would be appropriate to reword Kingsley's lines as follows: 'People call them Kongamatos: but that is only because they are ashamed to call them pterodactyls, after denying so long that pterodactyls could exist.'

Pterosaurs in Texas?

A reclusive race of pterodactyls undisturbed by the local populace and undiscovered by the scientific community amid the primeval swamps of the Dark Continent may not seem totally beyond the realms of reasonable probability. The concept of flying reptiles soaring through the open skies of modern-day Texas is quite another matter.

Nevertheless, although fewer in number, some sober reports of pterosaurian look-alikes have indeed been filed from this part of the world – and, as only to be expected from the Lone Star State, they are apparently far bigger in size than any reported elsewhere.

The year 1976 was a major time for such sightings, whose epicentre was a small triangular area in the south-eastern tip of Texas bordering with Mexico. The classic encounter took place on 24 February, and featured three schoolteachers driving along an isolated road south-west of San Antonio. Suddenly, a huge shadow fell over the road, and after glancing

up to see what was responsible for it, Patricia Bryant spied a monstrous creature gliding overhead – no higher than the telephone wires, but with a wingspan of 15–20 ft. Its body was encased in a greyish skin, and when fellow teacher David Rendon observed it, he was struck by the distinctly bat-like appearance of its huge wings, which resembled great membranes stretched across a framework of bones.

Unable to put a name to what they had seen, the trio spent some time afterwards looking through encyclopedias in search of a comparable creature. Eventually they found one – its name was *Pteranodon*, a huge pterosaur from the Cretaceous, with a long toothless beak, a lengthy bony crest, and a massive wingspan of up to 30 ft.

Life-sized reconstruction of Pteranodon *– do high-flying relatives still wing through the North American skies? (Dr Karl P.N. Shuker/reproduction courtesy of Drayton Manor Park & Zoo)*

Unbeknownst to the teachers, just a few days earlier and only a little further south two other eye-witnesses had nominated a *Pteranodon* as the animal most similar to the mysterious winged beast that they had seen. This occurred after Libby and Deany Ford, in mid-January, had sighted what they initially referred to as a big black bird, but with a bat-like face, near a pond several miles north-east of Brownsville, just inside Texas's border with Mexico.

A week earlier, an even stranger beast had been spied, which seemed to combine features from both of those described above. During the evening of 7 January, after hearing a loud crash, as if something had collided against his trailer home near Brownsville, Alvérico Guajardo decided to step outside and investigate – a decision that he was soon to regret.

When he switched on the headlights of his station wagon to expose the intruder-cum-vandal, he was confronted by a terrifying apparition – glaring at him infernally with blazing eyes of scarlet. Garbed in inky-black plumes, and standing 4 ft high, it raised its 2–4-ft-long beak, and a pair of dreadful bat-like wings could be seen wrapped around its shoulders. Uttering a spine-chilling shriek, the monster backed away to escape the headlights' penetrating beam, while a greatly frightened Guajardo fled to his neighbour's home. The next morning, still trembling, he recounted his amazing experience to a local news reporter, who was greatly impressed by what he felt to be Guajardo's evident sincerity – and fear.

Even more horrific was the attempted abduction of Armando Grimaldo, at Raymondville, just north of Brownsville by a man-sized *beakless* creature with dark, leathery, unfeathered skin, the face of a bat or monkey, large flaming eyes, and a 10–12 ft wingspan. No sooner had the sounds of bat-like wings flapping and an unusual kind of whistling alerted Grimaldo to the presence of something near, as he sat in his mother-in-law's backyard on the evening of 14 January, than the afore-mentioned creature allegedly swooped down and snatched at him from above with big claws. Happily, it did not succeed in carrying him away, and soon flew off – leaving a shocked but uninjured Grimaldo to wonder forever afterwards just what it was that had attacked him and had torn his clothes on that nightmarish evening.

More recently, on 14 September 1983, ambulance technician James Thompson was driving along Highway 100 to Harlingen, midway between Raymondville and Brownsville, when a remarkable airborne object with an eyecatching tail flew across the road about 150 ft in front of him. Thompson was so astounded by what he saw that he pulled up and stepped out of his ambulance in order to obtain a better view of it as it skimmed over the grass.

Its tail is what caught my attention . . . I expected

> him to land like a model airplane. That's what I thought he was, but he flapped his wings enough to get above the grass . . . It had a black, or greyish rough texture. It wasn't feathers. I'm quite sure it was a hide-type covering . . . I just watched him fly away . . .

According to Thompson, the creature measured 8–10 ft in total length, with a thin body whose tail terminated in what he referred to as a fin, and had a wingspan that was at least as wide as the ambulance (5–6 ft). He also reported that, whereas its neck was virtually non-existent, the back of its head bore a hump, and there was also a structure near to its throat that reminded him of a pelican's pouch. Initially, he could only assume that it was some form of odd bird, but after reading up on the subject he revised his identification, describing the creature as a 'pterodactyl-like bird'.

In response to this record, staff at the Laguna-Atacosta Wildlife Refuge suggested several more conservative identities for consideration, including an ultralight aircraft, and the white pelican. Needless to say, however, aircraft (ultralight or otherwise) do not flap their wings, and pelicans have neither a humped head nor a tail fin. What is particularly interesting about this report is that, whereas the earlier ones were linked with the giant tailless *Pteranodon*, the tail fin of Thompson's creature is a feature of the smaller, tailed rhamphorhynchoids.

Texas is not the only state in the USA to feature reports of 'neo-pterosaurs'. Carl Larsen has documented a notable incident from Pennsylvania (*Pursuit*, fall 1982). It was around 9.30 am on 8 August 1981, and Leverne and Darlene Alford were nearing the town of Ickesburg after driving for two hours from Carlisle towards Lock Haven along Highway 74 crossing Tuscarora Mountain. Suddenly, the noise of their oncoming car disturbed two enormous winged creatures, each about 3 ft tall, perched on the ground up ahead.

To the Alfords' great alarm, the two creatures promptly began running down the road directly towards them, with wings fully outstretched (spanning the road's 15 ft width), attempting to gain sufficient speed in order to become airborne. A mere 6 ft away from what seemed destined to be a major collision, the nearer of the two creatures turned to one side, and both succeeded in taking off into the air. For the next 15 minutes, the Alfords were able to follow them as they flew ever higher directly above the road, but eventually they dwindled to the merest specks in the sky. A sketch of one of these creatures by Darlene, depicting it as viewed from below while in flight, revealed that its 'tail' was nothing more than a slight outward curve beyond the posterior perimeter of the immense wings – the only other structure visible from below was its beak, characterized by its rounded tip. In a second sketch, showing the head and neck in profile, Leverne disclosed that they had each borne a prominent backward-pointing crest.

Were they birds? Not as we know them, judging from the Alfords' description:

> They didn't seem to have any feathers. They looked like they were covered with skin. I immediately thought of those prehistoric birds. They were both about the same size, with long necks curved in an S-shape. They were dark gray in colour, with rounded beaks.

The 'prehistoric birds' were obviously pterosaurs – and, except for their round-tipped beaks and long necks, the Tuscarora Mountain flyers certainly bore far more resemblance to *Pteranodon* than to any avian species. Furthermore, as we shall see shortly, there is another giant pterosaur from North America's Cretaceous that even shared their beak and neck.

Another case worthy of inclusion here emanated from south-eastern Arizona. If genuine, it is certainly the most important ever recorded, but it sounds almost too good to be true.

The case was published by the *Tombstone Epitaph* on 26 April 1890, which claimed that six days earlier, two ranchers riding through the Huachuca desert between the Whetstone Mountains and the Huachuca Mountains outside Tombstone had encountered an incredible monster with featherless leathery wings, writhing on the ground as it made futile attempts to become airborne. If the report is to be believed, the creature was of truly gargantuan proportions – over 92 ft in total length, with a wingspan of about 160 ft! Faced with such a horror, most observers would have been more than content to redirect their journey elsewhere with all speed, but the ranchers were clearly made of sterner stuff. Unfazed by its enormity, not to mention its lengthy beak crammed with sharp teeth, they allegedly opened fire with their Winchester rifles, killing the creature outright.

Not surprisingly, it soon occurred to them that the people back home might find their story a little difficult to believe, and so they cut off the tip of one of its wings and took it back with them as proof of the monster's reality. What became of this remarkable trophy, however, is unknown – indeed, the entire tale might have been written off as a

far-fetched yarn long ago, were it not for Harry McClure. In 1910, he had been a young man living in Lordsburg, New Mexico, roughly 97 miles north-east of Tombstone. In 1969, after reading a magazine article on monsters that mentioned this incident, he came forward to announce that he not only remembered hearing all about it at the time, but also had known the ranchers themselves, who were well-respected citizens. Moreover, the true facts of the case as recalled from his youth were much more sober than the *Epitaph*'s account.

According to McClure, the beast's wingspan had only been 20–30 ft, and it had twice succeeded in becoming temporarily airborne, travelling some distance through the air before crashing back to earth. In addition to its wings, it had a single pair of horse-like legs, and its eyes were extremely large, as big as saucers. The ranchers had indeed shot at it with their Winchesters, but, contrary to the newspaper's claims, the beast was not killed, and the ranchers eventually left it alone, still striving to become airborne.

Petroglyphs of the piasa

No coverage of North America's winged reptilian monsters would be complete without mentioning the *piasa* of Illinois. On or around 1 August 1673, French Jesuit priest Father Jacques Marquette was journeying down the Mississippi River when, upon reaching the section that nowadays passes by Alton, he encountered two terrifying monsters. Fortunately, they were quite harmless, because they happened to be a pair of enormous petroglyphs, meticulously carved and painted about 80 ft above the river upon the side of the limestone cliff on which Alton would one day be built. The portion of the cliff that had borne the body of one of the petroglyphs had crumbled away with the passage of time – so only the monster's head remained. The second petroglyph, on the other hand, was still present in its entirety, and depicted what would have been an animated nightmare, had it ever lived.

According to the description by Marquette included in his published journal of 1681, the beast was as large as a calf and had a man's face, but its head and horns were those of a deer, it had a tiger's beard, red eyes, and a tail ending like that of a fish but so long that it passed over the beast's scale-covered body and between its legs under its body. It was painted in three colours – red, black and bluish-green.

Later descriptions by other observers of this spectacular representation provided some significant additional details. The precise size of the depicted creature was 30 ft long and 12 ft tall. It possessed a pair of large wings, raised upwards as if it were about to take flight, with a span of around 16–18 ft. And its legs were bear-like, but terminated in the talons of an eagle. It is very fortunate that the creature's appearance had been documented in detail, because in or around 1856 some nearby quarrying disrupted the cliff face, as a result of which the petroglyph shattered and cascaded down into the river.

The terrifying petroglyph-portrayed piasa *of Illinois, as depicted by* Fate *magazine. (Llewellyn Publications/Fortean Picture Library)*

In the meantime, however, information regarding the identity of the creature portrayed by it had been obtained from the local Illini Indians, who referred to it as the *piasa* – 'the bird that devours man' – and recounted various legends in which these creatures had terrorized the Indians' ancestors until eventually slain by them. Just a fanciful example of native folklore, or a distant, distorted memory of a real animal? And who created the petroglyphs anyway? The Illini of long ago? In his book *The Piasa, Or the*

Devil Among the Indians (1887), Perry Armstrong wondered if this beast was based upon memories of a living pterosaur (specifically a rhamphorhynchoid) – a notion that has also been raised by several other investigators.

The answers to all of these questions are still unknown, but one thing is certain – anything that inspires a work of such size and elaborate composition as the *piasa* petroglyphs is evidently of great significance to the artist(s) responsible. It hardly seems likely that they would have invested such time and effort in portraying a wholly imaginary monster.

Rebirth of Quetzalcoatlus

Notwithstanding the above accounts, it is likely that the mere suggestion of any modern-day pterosaurs (let alone giant ones) existing in Texas, not to mention elsewhere in North America, would have received short shrift even among the more open-minded members of the cryptozoological community – had it not been for 1975, that is, the year which witnessed a discovery so remarkable that, suddenly, anything seemed possible.

This was when palaeontologist Dr Douglas Lawson, from the palaeontology department of California University (Berkeley), announced the discovery of a colossal new species of pterosaur from the late Cretaceous. He had personally discovered the first remains in 1971, while still a postgraduate student at Texas University and undertaking excavations in the Big Bend National Park, Brewster County, in western Texas. During the next three years, the partial skeletons of three separate specimens were unearthed there.

Based upon these remains, which included a single radius (forearm bone) measuring over 2 ft long, calculations of the species' likely wingspan gave an initial estimate of up to 51 ft, but later fossil finds reduced and refined this to the currently accepted figure of 36–39 ft. Nevertheless, that is still more than sufficient to crown this revolutionary new pterosaur the biggest flying creature ever recorded by science – effortlessly lifting the title from fellow American pterosaur *Pteranodon sternbergi*, with a wingspan of around 30 ft.

Another of its claims to fame is that it is currently the most recent ('youngest') of all pterosaur species, because its fossils are the only examples of such creatures that date from the very end of the Cretaceous. Morphologically, it was quite different from the familiar *Pteranodon* – apart from its far greater wingspan, it had a shorter crest, much longer neck and limbs (but exceedingly short tail), and a sturdier beak that was slightly rounded at its tip. Emphasizing how dramatic this winged wonder must have appeared in life, it was dubbed *Quetzalcoatlus northropi*, after the Aztec deity whose symbol was a huge flying serpent.

Its lifestyle probably differed from *Pteranodon*'s too, for, whereas the latter's fossils occur in marine strata and imply a largely piscivorous diet, those of *Quetzalcoatlus* were excavated from the flood plain of a meandering river that during Cretaceous times was about 250 miles inland. From this, two quite different hypotheses concerning its diet have arisen. According to one school of thought, it may have utilized its long toothless beak for probing crabs and molluscs from the mud at the bottom of ponds and rivers. In contrast, others picture it as a carrion feeder, tearing flesh off the corpses of dead dinosaurs – a task for which its powerful neck would have been well suited.

When is a pterosaur not a pterosaur?

From the episodes recounted in this section, it is clear that the eyewitnesses believed the creatures that they saw to resemble pterosaurs more closely than anything else known to them. Nevertheless, certain of these beasts were evidently not pterosaurs. Alvérico Guajardo's attacker, for instance, had bat-like wings, but black plumes – thereby eliminating a pterosaur. The wings' bat-like appearance might simply have been an illusion created by the way in which they were being held, rather than a naked, leathery skin.

Similarly, the bat-faced winged creature spied by Libby and Deany Ford was initially referred to by them as a big black bird – only after seeing pictures of pterosaurs did they ally it with *Pteranodon*, whose slender face, bony crest, and extremely long pointed beak instantly differentiate it from any type of bat. (Making matters even more complex when attempting to analyse reports of apparent pterosaurs in North America is the abundance of accounts featuring what appears to be a still-undiscovered species of gigantic flying bird – a situation dealt with in its own right a little later in this chapter.)

Another bat-faced monster with wings was the would-be abductor of Armando Grimaldo. Here, however, its skin was specifically described as unfeathered, and it had no beak – thus ruling out birds and pterosaurs alike. Is it possible that the description of this creature's face was more than just comparative – that the animal really was a giant bat? In a *Fortean Studies* article of mine from 1994, I discussed the

plausible existence of such beasts in Java and parts of western Africa, but Loren Coleman clearly feels that this identity should be applied to certain of the cases documented in this section too – in his book *Curious Encounters* (1985), he referred to the Texas terrors from 1976 as '. . . unknown giant bats seen along the Rio Grande, near Brownsville'. Who knows – this identity may even be relevant to the man-faced *piasa*, whose resemblance to a pterosaur is remote in the extreme.

Certain other accounts given in this section do recall pterosaurs – but the situation here is complicated by the fact that more than one type of pterosaur appear to feature in them. Whereas, for instance, the fin-tailed glider spotted by James Thompson corresponds with a rhamphorhynchoid, the creature spied by the three teachers near San Antonio and the Tuscarora Mountain duo encountered by the Alfords recall a giant pterodactyloid, such as *Pteranodon* or *Quetzalcoatlus* (the latter is particularly reminiscent of the Tuscarora creatures). As I have yet to uncover another American case featuring a rhamphorhynchoid replica, the Thompson beast remains an enigma. The pterodactyloid versions, however, are nothing if not thought-provoking, and approach in size the giant desert-dwelling pterosaurian beasts described from Namibia.

If, somehow, a lineage of giant pterosaurs has persisted to the present day, *Quetzalcoatlus* seems to offer a more plausible ancestry for it than *Pteranodon* or any other genus. Its occurrence inland ties in with the habitats reported from the USA and from Namibia for their winged colossi. True, no *Quetzalcoatlus* remains have so far been unearthed in Africa, but those of a related giant, *Titanopteryx*, have been found in North Africa.

Whereas the concept of winged monsters soaring over the little-explored deserts of Namibia may not seem too outrageous, attempting to convince people of similar creatures existing undiscovered in a land as ostensibly familiar as the USA is another matter entirely, until we consider that only 200 miles east of Brownsville, Texas – heartland of pterosaur sightings – is Mexico's Sierra Madre Oriental, which is actually one of the least explored regions in the whole of North America. A suitable home and hideaway for a viable population of *Quetzalcoatlus*?

It is worth noting that, in 1968, Mexican archaeologist Dr José Díaz-Bolio announced that among the Mayan ruins of Tajín, at Totonacapan in the north-eastern portion of Veracruz, Mexico, was an ancient relief sculpture of an extraordinary 'serpent–bird' that he considered not to be a fictional beast but a realistic representation of some creature contemporary with the Mayans. What is of relevance here is that the Mayans lived a mere 1,000–5,000 years ago, and their serpent–bird bears more than a passing resemblance to a pterosaur.

On the other hand, after hearing about a report from early 1985 concerning the supposed filming of some pterodactyls flying over Mexico's Yucatan Peninsula, Loren Coleman made some enquiries and drew a total blank from the locals. Indeed, when he showed one man a sketch of a pterodactyl, he had no hesitation in identifying it as an eagle! Coleman personally favours a streamlined relative of pelicans called the frigate bird, startlingly prehistoric in appearance, as the species responsible. Presumably, therefore, twentieth-century pterodactyls eschew the lands of their Mayan antecedents in favour of more northerly realms.

The likelihood that *Quetzalcoatlus* subsisted upon carrion is also consistent with what one would expect the dietary preferences of the modern-day monsters to be (especially in the arid wastelands of Namibia's deserts), and its general morphology and size correspond very closely indeed with theirs.

In addition, the massive crests upon its humeri (upper arm bones) for muscle attachment show that it must have possessed very powerful flight muscles. This indicates that, in contrast to early speculation, *Quetzalcoatlus* must have been capable of powered, flapping flight as well as passive gliding – thereby yielding an identity equally consistent with reports of flapping and gliding pterosaurian mystery beasts.

Nor should we forget that it is the youngest pterosaur currently known from the fossil record, with remains dating right up to the very close of the Cretaceous, and that these selfsame remains eluded scientific detection until as recently as 1971. If there is any pterosaur that could conceivably be represented by undiscovered *post*-Cretaceous fossils, *Quetzalcoatlus* must surely be the one.

Cryptozoology is full of curious coincidences, but few are more curious (or contentious) than the undeniable fact that modern-day reports of giant pterosaurian look-alikes just so happen to emanate from the very same region that was once home to a bona fide creature of this type.

In addition, the eyewitnesses of the mid-1970s versions are not likely to have been aware of the near-synchronous discovery of *Quetzalcoatlus*, because reconstructions of it did not appear in popular-format books and newspaper articles for quite a time afterwards.

Is Dracula alive and well and living in South America?

There are three modern-day species of vampire bat, all exclusively American, whose collective distribution range stretches southward from southern Texas to northern Argentina and southern Brazil. Despite their infamous (and erroneous) reputation as blood-suckers (they merely lap blood flowing out of wounds surreptitiously incised with their razor-sharp canine teeth), they are decidedly unremarkable in appearance – no more than 3½ in long, with a wingspan not exceeding 6 in. And then along came a super-vampire, called Dracula!

Within the *Proceedings of the Biological Society of Washington* (7 December 1988), researchers Drs Gary Morgan, Omar Linares and Clayton Ray described a new species of vampire bat, 25 per cent larger than *Desmodus rotundus* (largest of the three known living species), and based upon two incomplete skulls and skeletal remains found in Venezuela's famous Cueva del Guácharo – home of the amazing sonar-emitting oilbird *Steatornis caripensis*. Dubbed *Desmodus draculae*, this giant vampire's remains date from the Pleistocene.

However, within a *Mammalia* paper from 1991 in which they describe the partial skull of a Pleistocene-dated *D. draculae* bat from a cave in south-eastern Brazil's Ribeira Valley, Brazilian zoologists Drs E. Trajano and M. de Vivo noted that there are reports from local inhabitants in the Ribeira Valley referring to attacks upon cattle and horses by large bats. Trajano and de Vivo cautiously wondered if these could be living specimens of *D. draculae*, but despite extensive recent searches of caves in this area, none has been found – so far?

Thunderbirds, big birds, and monster birds

According to Amerindian mythology, the thunderbird was a massive bird of prey that soared through the skies on gigantic wings, bringing rainstorms and thunder to the lands below, and as befits a creature of such importance its effigy appears on the totem poles of many different tribes. Their names for it vary – to the Saint John River Indians it is the *cullona*, the Comanche of the southern Plains know it as the *ba'a'*, Wisconsin's Potawatomi call it the *chequah*, *omaxsapitau* ('big eagle') is the name given to it by the Blood tribe of Blackfoot in Alberta, and so on – but they are all clearly referring to the same type of bird.

Moreover, although thunderbirds were once presumed to exist only within the confines of these legends, several anthropological studies of Amerindian lore have unearthed remarkable accounts ostensibly based upon real events, some dating back less than 200 years.

One of the most detailed and dramatic of these featured a Cree member (by marriage) of the Blood Blackfoot tribe, called White Bear, and occurred during a very harsh winter around 1850. This was when he and three fellow hunters, in a desperate quest for meat with which to feed their starving kinsfolk, set out to Devil's Head Mountain, north-east of Banff in Alberta. Eventually they set up a base, and each of the four men then journeyed forth in a different direction in search of suitable quarry. After a time, White Bear met with success, killing a deer, whose precious carcass he tied securely to his back before beginning the return journey to their base – but he never reached it.

An enormous shadow appeared overhead, and almost simultaneously he was hoisted up into the air, whereupon he saw to his horror that he was being carried off by a gigantic bird of prey – for its huge talons had grasped the deer carcass strapped to him! His avian abductor effortlessly transported White Bear and his deer for some distance through the sky, finally arriving at a lofty cliff, whose higher reaches bore its nest – and into which it unceremoniously dropped its still-living but terrified human cargo.

When he had recovered from his precipitous descent, White Bear took the opportunity to take a closer look at the giant bird, only to learn to his even greater horror that it was an *omaxsapitau* – a colossal creature resembling an eagle but far larger than any living bird of prey presently known to science, yet well known to (and greatly feared by) the Blackfoot.

Equally disturbing was his discovery that he was sharing the nest with two juvenile *omaxsapitaus*, for whom he and his deer were evidently intended as their next meal, as evidenced by the assortment of bones, including some recognizably human remains, readily visible inside the nest. Clearly White Bear was not the first human to have been carried away by the chicks' parent, but as he had no intention of sharing his predecessors' terrible fate he lost no time in formulating a plan of action with which to achieve his escape.

Without warning, he grabbed the two young birds' feet, and immediately threw himself out of the nest, hauling them after him as he plunged down through the air. In a bid to halt their rapid, uncontrolled descent, the two birds naturally opened their wings and, as a result, acted as a pair of parachutes,

enabling White Bear to land safely on the ground. As soon as his feet made contact, he released his hostages, who promptly flew away – but not before he had pulled two long feathers from their tails, which would confirm the reality of his harrowing experience when recounting it back home to his fellow Blackfoot tribesmen.

This story is reminiscent of an Arabian Nights story featuring the abduction of Sinbad the sailor by an immense carnivorous bird called the roc, but, unlike Sinbad, White Bear was a real person, a professional eagle trapper who died in 1905 at the age of about 83. His grandson, Harry Under Mouse, was the source of this account, which he gave to Dr Claude Schaeffer from Montana's Museum of the Plains Indians, in Browning – who published it, along with a number of others, in June 1951.

It might be easy for the more sceptically minded to dismiss such reports as modern-day Amerindian fables inspired by traditional thunderbird legends – if it were only Amerindians who were encountering these creatures. In reality, however, numerous European Americans have also reported seeing them – particularly in the skies over the southern United States – and most have been likened by their eyewitnesses to huge vultures or eagles, with astonishingly immense wingspans. As a consequence, the media habitually refer to them as 'Big Birds' (though a certain star of the American children's TV series *Sesame Street* may also have served as inspiration!).

The significance of these birds' alleged wingspans can be judged bearing in mind the following data. Notwithstanding its relatively small body, the wandering albatross *Diomedea exulans*, a southern oceanic seabird, has the greatest wingspan of any known species of bird alive today – when spread fully, its narrow wings yield a span of up to 12 ft. The world's largest bird of prey, the Andean condor *Vultur gryphus*, whose huge distribution ranges from Venezuela to Tierra del Fuego, is second, with mighty wings reaching up to 10½ ft. And the largest bird of prey native to North America, the California condor *Gymnogyps californianus*, has a wingspan of up to 10 ft.

A typical sighting of a Big Bird was that of Clyde Smith, his wife, and Les Bacon on 10 April 1948 at Overland, Illinois, when they spied a huge object flying overhead that seemed to be a dark-grey pursuit plane – until it flapped its wings! As revealed by Loren Coleman in *Curious Encounters* (1985), this is just one of several similar reports of a cryptozoological UFO (i.e. an unidentified flapping object!) that emanated from Illinois and the Illinois–Missouri borderlands in that same month.

On the evening of 24 April, for instance, two Missouri patrolmen from the St Louis Police Department – Francis Hennelly and Clarence Johnson – spied an enormous bird silhouetted across the moon that they estimated to be the size of a small aeroplane. Earlier that day, E.M. Coleman and his teenage son had observed a gigantic bird flying at a height of about 500 ft above Alton, Illinois, whose body resembled a naval torpedo and cast a shadow as big as a Piper Cub would yield if flying at the same height.

Perhaps the most breathtaking sighting reported during this outbreak of Big Bird activity, however, was that of St Louis chiropractor Dr Kristine Dolezal. On 26 April, she had been watching an aeroplane passing by from the porch of her second story apartment when suddenly a gigantic bird appeared, and seemed set on a direct collision course with the plane. Fortunately, however, this did not occur, and both cruised out of sight into the clouds.

It is possible that these giant creatures are either curious about the nature of aeroplanes, or may even feel threatened by them, because there are other cases on file featuring confrontations between small planes and Big Birds. In 1947, for example, a pilot claimed that while flying over Arizona he had narrowly avoided a collision with a gargantuan bird whose wingspan, in his opinion, exceeded 30 ft. One day in May 1961, a businessman from New York was piloting his light aircraft along the Hudson Valley River when he was 'buzzed' by an immense bird gliding past him without flapping its wings '. . . like a fighter plane making a pass', as he was later to describe it to the press.

In his *Encyclopedia of Monsters* (1982), Daniel Cohen briefly reported what may have been an even more sinister encounter. In November 1962, a United Airlines plane crashed into a wooded area of Maryland. All passengers and crew were killed, and on the wreckage were traces of blood and feathers, from which the official enquiry concluded that the plane had collided with a flock of birds, probably geese, of which a few must have been sucked into the engine. There have been several tragic occurrences of this nature worldwide, so there seemed no reason to doubt such an explanation here – except for one disconcerting discrepancy. The plane's tail assembly apparently bore a number of gouges and slashes – but would geese be capable of perpetrating such a violent assault? According to Cohen, there were those who voiced the opinion, based upon these marks, that the plane had been attacked and brought down by an angry thunderbird, i.e. a belligerent Big Bird that may have deemed the craft to be a rival.

Pennsylvania has hosted its fair share of Big Bird appearances down through the years. In 1892, lumberman Fred Murray reputedly spied a flock of 'giant buzzards' with 16 ft wingspans near his lumber camp in Cameron County.

Even more sensational was the specimen observed in 1898 by Potter County School superintendent Arch P. Akeley. According to his testimony, the bird was 4–6 ft tall when standing upright, sported grey plumage, a feathered head and neck (but without a ruff around its neck), and a wingspan of more than 16 ft. For a Big Bird report, this is an unusually detailed description, but there is a very good reason for that – instead of being little more than a silhouette soaring at a great height through the skies, at the time of Akeley's sighting this particular individual was being held captive in a secure cage! What may be the only Big Bird ever captured and exhibited alive had been trapped and successfully caged by a farmer in Crawford County after he had spotted it pecking at the corpse of a dead cow at the far end of his farm, near Centerville. The farmer had assumed that it was either a California condor or an Andean condor, but Akeley knew that it could not be either of these species. Apart from its much greater size, its grey plumage and feathered head instantly distinguished it from both species (which are black and bald), and its lack of a neck ruff further differentiated it from the Andean condor. What became of the farmer's unique zoological exhibit is not known.

Stretching from Harrisburg in Pennsylvania down as far as Lake Ontario in New York, and covering 200 square miles, the Allegheny Plateau is a rugged wilderness in which many Big Bird sightings have occurred, dating from antiquity right up to the present day. One of the most noteworthy of these was made around 1940 by naturalist Robert Lyman, in the Black Forest region, which he documented as follows in his book *Amazing Indeed* (1973):

> I saw a huge bird which I am certain was a thunderbird. It was on the ground in the center of Sheldon Road, about two miles north of Coudersport, Pennsylvania. It was brownish in color. Legs and neck were short. It was between three and four feet tall and stood upright like a very large vulture. When I was about 150 ft away it raised to fly. It was plain to see its wingspread was equal to the width of the road bed, which I measured and found to be 25 feet. I will concede it may have been 20 feet but no less. The wings were very narrow, not over one foot wide . . . Other local reports claim the thunderbirds are grayish in color. As they mature they may change from brown to grey.

The skies of western Canada and the northwestern USA are also traversed by Big Birds, with Washington's Olympic Mountains among the most frequent localities for sightings of such creatures. Of particular interest are the claims and traditions of several different Amerindian tribes from this region of North America that its seas are fished by thunderbirds for whales, which they carry aloft to their nests high in the mountain peaks. According to the Twana Indians of the Hood Canal region, their hunters sometimes found these nests, which are said to be simple structures composed of sticks and leaves.

For the most significant and controversial Big Bird episodes of modern times, however, it is to the state of Illinois that we must return, which experienced a major spasm of sightings in 1977, including the horrific near-abduction of a 10-year-old child.

It was about 8.30 pm on 25 July 1977, when three boys playing in a back yard at Lawndale, in Illinois's Logan County, saw two enormous black birds swooping down from the sky. They had evidently spotted the children, because they immediately pursued one of them, Travis Goodwin – but before they could reach him, he had dived into the swimming pool. Without further ado, they switched their attention to a second member of the trio, 10-year-old Marlon Lowe. He too began to run away, but unlike Travis he was not so lucky.

Even as he was still running, he felt the talons of one of the birds seizing the shoulder straps of his singlet-like sleeveless shirt and was promptly hauled up about 2 ft into the air by his winged abductor. Marlon screamed at the top of his voice for his mother, and his cries alerted not only his parents but also two of their friends, cleaning out a camper nearby. All four adults came running straight away, but his mother Ruth was the first to arrive on the scene – a spine-chilling scene that seemed to owe more to surreality than reality.

Right before their eyes was the horrific spectacle of a black vulture-like bird, with a large curved beak, a white ruff around its long neck, and a wingspan estimated at 8–10 ft, carrying Marlon a distance of 30–40 ft from the Lowes' back yard into their front yard. During this brief but terrifying journey, Marlon was frantically punching up at the bird, which seemed to be experiencing no difficulty in transporting his 65 lb weight. Happily, however, one of his punches evidently hit home, because the bird suddenly dropped him, and continued flying towards and over the camper, accompanied by its partner.

By this time, the other three adults had also reached the spot, and together with Ruth they were

able to watch the birds fly off towards some large trees along Kickapoo Creek. Marlon, meanwhile, had picked himself up and had fled for safety into the camper. As the bird had carried him via his shirt's straps, he was not scratched, but his shirt was frayed, and he suffered nightmares when he attempted to sleep. Ruth phoned the police, who duly searched the area that night and the following day, but nothing was found.

Marlon Lowe and his mother Ruth, following his abduction by a giant mystery bird. (Range Pictures/Bettmann Archives/United Press International)

As with the Illinois Big Bird 'flap' of 1948, however, for quite a time afterwards birds fitting the description of Marlon's abductor and partner were spied elsewhere in the state. Tragically, however, this did not prevent the Lowes from becoming the focus of considerable ridicule, as well as the targets for anonymous, sick-minded cranks, who would periodically deposit dead animals upon their doorstep, including the carcass of an eagle.

Over the years, people reporting sightings of many different types of mystery creature unrecognized by science have often run the gauntlet of mockery and disbelief from neighbours and colleagues. Such occurrences are a sad but all too common side effect of cryptozoological confrontations. Yet few have been as unpleasant and devastating as the evil, merciless harassment experienced by the Lowes. Only a year later, the stress stemming from the memory of his abduction, and compounded by the vile hate campaign, had left its mark for all to see – Marlon's hair, once coppery-red, had turned grey.

Readers may well have wondered why the North American birdwatching fraternity has not featured in reports of Big Birds. Surely, out of the countless numbers of binocular-toting 'twitchers' compiling their life lists, someone somewhere has spied one of these creatures. If so, why have they not come forward? I think that we need look no further than the Lowes' experiences for an answer to this mystery. There is a universe of difference between the thrill of reporting a vagrant European warbler in Illinois or a Californian finch turning up in Missouri, and the stigma long associated with confessions of the cryptozoological kind.

By mid-August 1977, publicly released reports of Big Birds in Illinois had ceased, but not before a one-time Marine combat cameraman had succeeded in filming what he believes to have been the two specimens responsible for the Lowe incident. On the morning of 30 July, John Huffer (known locally as 'Texas John'), from Tuscola, was fishing with his son at Lake Shelbyville when they spied two exceedingly large birds (but one notably bigger than the other) roosting in a tree, and depositing baseball-sized droppings around its base. Having his cine-camera to hand, Huffer decided to film them, so with the aid of his boat horn he flushed them out of the tree, and began filming the larger of the two birds as it took to the air, obtaining more than 100 ft of film before it settled in another tree out of camera range.

Judging from excerpts shown on American TV and stills reproduced in two newspaper accounts, however, intervening foliage had partially obscured the bird for much of the time, rendering impossible any attempt at precise identification or scaling. According to Huffer, it had a 12 ft wingspan and an 18-in-long neck, and the plumage of both birds was black. Huffer was familiar with the appearance of America's known birds of prey, particularly turkey vultures, and was greatly surprised when ornithologists dismissed the bird in his film as the common red-headed turkey vulture *Cathartes aura*. In response to this claim,

he swiftly pointed out that his bird lacked the turkey vulture's red neck, and he also considered that the shape of its head and legs were different.

Sightings of Big Birds in North America have continued to the present day, and many additional examples are included in Mark A. Hall's indispensable book, *Thunderbirds! The Living Legend of Giant Birds* (1988) – not only the most comprehensive work ever published on this subject but also a crypto-zoological classic of modern times. A chapter on Pennsylvanian Big Birds also appears in the revised edition of his second book, *Natural Mysteries* (1991). Resulting from these extensive studies, Hall has acquired a detailed picture of the Big Bird's general appearance and lifestyle, which can be summarized as follows.

Excluding a handful of sightings that featured readily identifiable birds clearly unrelated to the Big Bird phenomenon (great blue heron, cranes, storks, pelicans and peacock!), the creatures in question are, indisputably, birds of prey. They have been variously compared by their eyewitnesses to giant vultures, eagles, and one or other of the two species of condor; their plumage has been given as grey, black, or brown, which is sometimes said to be much paler underneath than on top; their beaks are long and hooked; their heads and necks variously feathered or unfeathered; and their wingspans immense – estimates of 10–30 ft being most common – with occasional references to white wingtips.

Of great significance is their consumption of living prey, aided by the apparent ability and power of their taloned feet to carry off victims as heavy as children (Marlon Lowe's is not the only case on file) and even, according to Amerindian lore, adult humans and whales.

They build nests, albeit of simple construction, on lofty cliff faces and crags, and during the year they undergo a marked pattern of migration. During the colder winter months they remain in the warm climes of the southern USA, but at the onset of spring they journey northwards to spend spring and summer in the Pacific Northwest. In so doing, their appearance coincides with the seasons of thunderstorms, which explains how these birds became associated with them by the early Amerindians. Travelling for much of the time over lofty, remote mountain ranges, they have succeeded in eluding scientific detection, but there is one expanse of territory along their route that provides little cover – the extensively populated areas of the Midwest. Presumably, therefore, it is no coincidence that there is a notable number of Big Bird sightings on file from Illinois and Missouri.

Such information as this is already of great interest, but what makes it even more so is the unequivocal fact that when viewed *in toto* it does not correspond with the natural history of any species currently known to science in the living state.

A verisimilitude of vultures, a comparability of condors, and an equivalence of eagles

Excluding species such as buzzards and kites, which are far too small to warrant serious consideration, there are only four birds of prey native to North America that could have any bearing upon the Big Bird, and all of them are regularly nominated by ornithologists as the solution(s) to any Big Bird case that is brought to public attention.

The most popular of these is the turkey vulture, distinguished from the next two by its brown plumage. The skin of its bare head and neck is bright red in colour; it has a total length of 2 ft, and a wingspan of 6 ft. When airborne, it soars in wide circles, its wings held in a broad v-shape, rocking rapidly from side to side. Abundant throughout most of the USA, and regularly spied in fields and along roadsides, it is a very familiar bird – so much so that it seems unlikely (though not impossible) that anyone could fail to recognize it and mistake it for something much larger and less familiar.

Candidate number two is the black vulture *Coragyps atratus* – just under 2 ft long, with a 4½ ft wingspan, bare black face but feathered head and neck, shorter tail but longer neck than the turkey vulture, and mostly black plumage offset by distinctive white wingtips. Often invading settlements in search of garbage and small animals, this species inhabits the southern and south-eastern parts of the USA, including Illinois and Missouri. When in flight, which tends to be a rather weak, low-powered affair, it flaps its wings deeply and then glides for a short period, during which time the wings are held horizontally.

Except for its smaller wingspan, the black vulture's morphology and flight strongly recall some Big Bird descriptions – to the extent that I consider it plausible that certain of these reports can be explained by unexpected encounters with big, bold individuals of this species, lurking in closer proximity to human habitation than usual, with exaggeration of their wingspan resulting from the eyewitnesses' surprise at meeting them.

The third candidate is by far the best for explaining some of the larger Big Birds from fairly long ago. As noted earlier, its 9–10 ft wingspan earns the California condor the title of North America's largest bird of prey. Almost 4 ft in total body length, this

magnificent species has predominantly black plumage but with white under-wing coverts that yield a striking triangle of white beneath each wing when viewed in characteristic soaring flight from below. Its head and neck are bare, exposing bright reddish-pink skin (bluish-grey as a juvenile), except for a small patch of black feathers on its forehead. Its hooked beak is very large and heavy, and when in flight its long, wide wings are held in a straight line.

This species traditionally boasted a very extensive distribution range, stretching along the Pacific Coast from British Columbia and southwards through Washington, Oregon, and California to northern Baja California in Mexico. During the Pleistocene, moreover, it even extended eastwards across the southern USA into Florida. Following a merciless programme of persecution during the nineteenth-century, however, its numbers plummeted horrendously. By the second half of that century, it had vanished throughout the entirety of its former range north of San Francisco and Baja California.

By 1980, just over a century later, less than 40 birds survived, comprising two tiny populations in California, and the species seemed doomed to extinction. Consequently, after much deliberation and following successful attempts to hatch California condor eggs in captivity and rear the fledgelings to adulthood, in 1987 the last six specimens known still to exist in the wild were themselves captured, and were introduced to their captive-raised counterparts maintained at San Diego Zoo and Los Angeles Zoo. For several years thereafter, the California condor was officially extinct as a free-living species, but in 1992 it re-entered North America's ornithological checklist when five specimens hatched at Los Angeles Zoo were released in Ventura County – the first step in what is hoped will be this species' successful revival in its native homelands.

Clearly, therefore, it is unlikely that the California condor, despite its great size, could be responsible for many (if any) Big Bird sightings from the past few decades, but it probably featured in some from pre-twentieth-century times and must have profoundly influenced Amerindian legends of the thunderbirds. Indeed, Schaeffer suggested that it might even have inspired the Blackfoot stories of the *omaxsapitau*. It is true that Alberta is outside the official boundaries of its former distribution range, but who can be certain what these boundaries were, during those distant ages when the thunderbird legends first arose?

This trio of species belongs to a taxonomic family of birds termed the cathartids or New World vultures, on account of their exclusive American distribution in modern times (though fossils of some long-extinct Old World species are also known). They share a number of characteristics that readily differentiate them from the accipitrids – the large raptorial family that contains the eagles, hawks, buzzards, harriers, and the true Old World vultures. Indeed, although traditionally assumed to be closely related to the latter birds, DNA analyses coupled with anatomical studies have confirmed that the cathartids are sheep in wolves' clothing – or, to be zoologically precise, storks in vultures' plumage!

In simple terms, they descended from the stork lineage but pursued a flesh-eating lifestyle, gradually transforming through convergent evolution into species bearing a superficial external appearance to the true, Old World vultures. Two of the features that distinguish them from the genuine article, however, are of particular relevance to the Big Bird issue.

Unlike accipitrids, the feet of cathartids are very weak and ill-designed for grasping, so that they are unable to carry anything but the smallest of prey. Consequently, apart from consuming diminutive items of living prey such as rats, lizards, and fledgeling birds, and consuming unattended eggs in nests, they thrive exclusively upon carrion. Also, whereas accipitrids construct nests, cathartids do not – depending upon the species, they lay their eggs on bare ground, ledges, in caves, hollow logs, or hidden amid vegetation or boulders.

From this, it hardly seems likely, therefore, that any of the three cathartids discussed above can be responsible for the thunderbird nests reported by various Amerindian tribes. Nor would they appear to be capable of abducting humans or whales as attested by eyewitnesses in Big Bird incidents of this nature.

The only native bird of prey in North America that offers any prospect of solving these mysteries is candidate number four, the golden eagle *Aquila chrysaetos*. With a total body length of 2½–3½ ft and a very impressive wingspan of up to 8 ft, this is a bird of considerable stature. Moreover, although it is present throughout the year in the western half of the USA and occurs during the winter months in most of the eastern half, it is rarely encountered by man, unless he penetrates its forbidding realms of remote mountain peaks and barren deserts. Consequently, its appearance is not as familiar as those of the more accessible cathartids. Its dark brown plumage, feathered head and neck, and dark under-surface (only in the juvenile are white under-wing patches present) collectively set this species apart from the three large cathartids. Also of note is that

several Amerindian names for the thunderbird incorporate 'eagle' or 'big eagle'.

Most significantly, however, as a member of the accipitrids the golden eagle builds a nest, usually on a high mountainous crag, and has extremely powerful grasping feet, with which it can seize and haul aloft prey as large as lambs and fawns – and perhaps, in exceptional cases, even larger victims. As outlined by John Michell and Bob Rickard in *Living Wonders* (1982), there is some controversial (and in at least one case seemingly incontrovertible) evidence that certain eagles have been powerful enough to lift and carry away small children.

Nineteenth-century engraving depicting Marie Delex's tragic abduction by a golden eagle.

One such case was that of 5-year-old Marie Delex, dating from 1838 and occurring in the Valais region of the Swiss Alps in central Europe. She had been playing with a friend on a mossy mountain slope, when suddenly a huge eagle swooped down upon her and bore her away, ignoring the screams of her terrified companion. The screams, however, did alert some peasants working nearby, who ran to the spot, but found nothing other than one of her shoes, at the edge of a precipice. She had clearly not fallen over it, however, because two months later a shepherd found her corpse, horribly mutilated, lying upon a rock about 1½ miles away from where she had vanished.

This was one of two incidents recounted by Felix Pouchet in his book *The Universe* (1873). The second, which took place in autumn 1868, was quoted directly from the account of an unnamed teacher in Missouri's County Tippah, and read as follows:

> A sad casualty occurred at my school a few days ago. The eagles have been very troublesome in the neighbourhood for some time past, carrying off pigs, lambs, etc. No one thought that they would attempt to prey upon children; but on Thursday, at recess, the little boys were out some distance from the house, playing marbles, when their sport was interrupted by a large eagle sweeping down and picking up little Jemmie Kenney, a boy of eight years, and flying away with him. The children cried out, and when I got out of the house, the eagle was so high that I could just hear the child screaming. The alarm was given, and from screaming and shouting in the air, etc., the eagle was induced to drop his victim; but his talons had been buried in him so deeply, and the fall was so great, that he was killed – or either would have been fatal.

The most famous case of avian abduction on record, however, which seems to have been proven beyond any reasonable doubt, featured a small 4-year-old Norwegian girl called Svanhild Hansen, whose incredible experience was investigated in such painstaking detail by Steiner Hunnestad that in 1960 he published an entire book on the subject.

On the fateful day in question – the morning of 5 June 1932 – she had been playing in the yard of her parents' farm at Leka, when a very large white-tailed sea eagle *Haliaeetus albicilla* swooped down, and lifted her bodily into the air, its huge talons firmly seizing her dress as it carried her through the sky for over a mile until it reached Haga Mountain at the valley's end. Here it dropped her on to a narrow 800-ft-high ledge, less than 70 ft below its nest – happily, the child's 42 lb weight had defeated its attempt to deposit her directly in it.

In the meantime, her absence had been noticed and swiftly acted upon by the people of Leka, who had sent out a search party to trace her. Looking upwards, some of the searchers spotted an eagle hovering above a ledge at the valley's farthest point, and when they

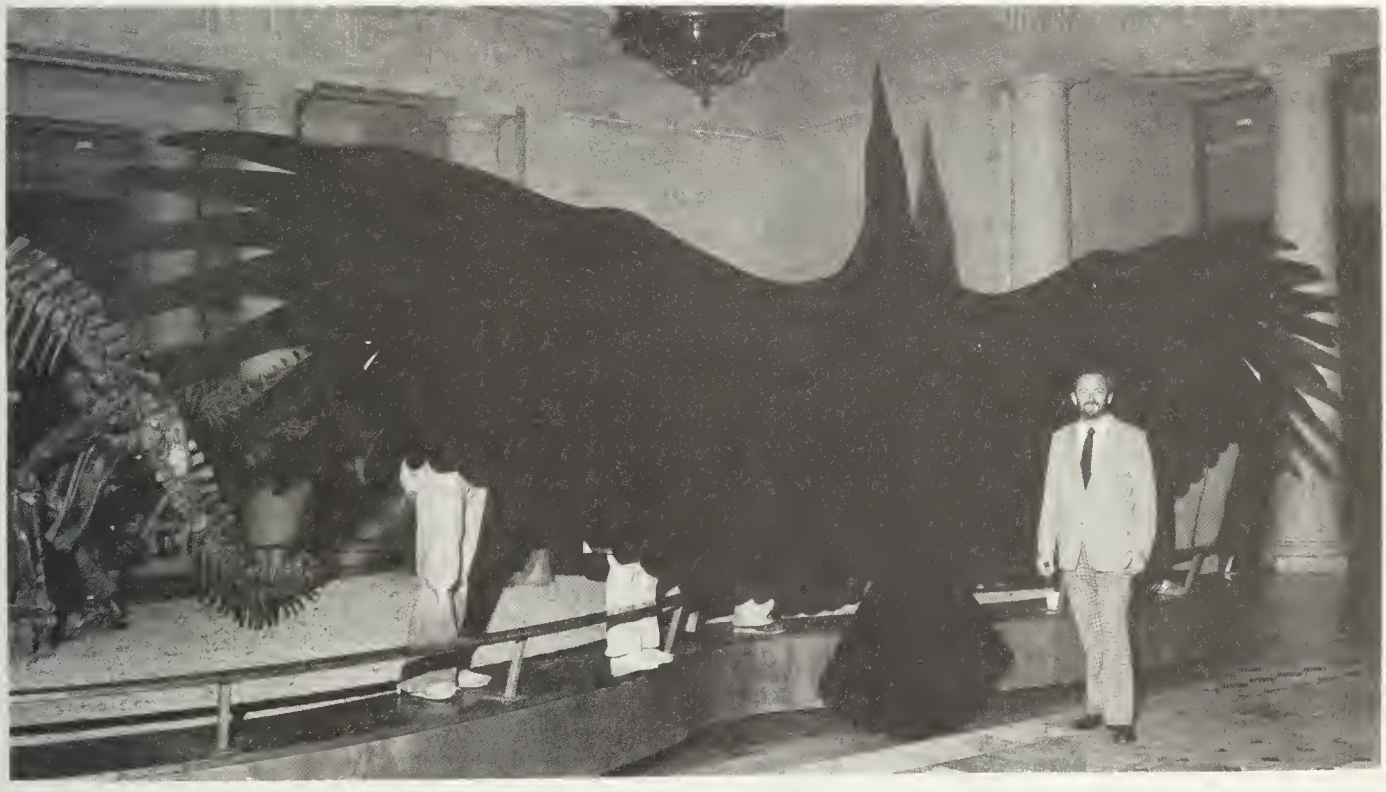
scaled the ledge to investigate they discovered Svanhild, very frightened but still alive and unharmed. As a souvenir of her terrifying experience, she still owns the checked, talon-torn dress that she had been wearing on that scary morning in 1932.

Consequently, if an unusually large golden eagle, not the most familiar of sights for many people in the USA, were to swoop down unexpectedly from the skies, not only would the shock of its appearance assist greatly in exaggerating its size in the eyes of its observers but it may also be capable of accomplishing the acts of child (though not adult) abduction claimed for the Big Bird. Here, then, is a promising solution to some Big Bird sightings.

like wraiths around and alongside light aircraft whose dimensions are little (if at all) larger than their own. To discover a plausible identity for these, we must turn away from the present – for only among the past has science ever encountered anything similar.

Turning to the teratorns

During the Pleistocene, North America was home to some very large cathartids, now extinct, including the La Brea vulture *Breagyps clarki*, and the great condor *Gymnogyps amplus* (the California condor's direct ancestor). None, however, could compare with two vulture-like species of such colossal size that they became known as teratorns – 'monster birds'.



Life-sized silhouette of Argentavis magnificens *displayed at the Los Angeles County Museum, with teratorn researcher Dr Kenneth Campbell standing alongside it. (Natural History Museum of Los Angeles County)*

Worth noting is that the bald eagle *Haliaeetus leucocephalus* is of similar size to the golden eagle, but its unmistakable form must surely eliminate it from contention as a Big Bird.

Yet even surprise and terror cannot sufficiently 'stretch' a golden eagle in order for this species to explain some of the classic Big Bird reports – featuring truly enormous birds that soar effortlessly

With a wingspan of 11 ft, Merriam's teratorn *Teratornis merriami* was larger than any modern-day bird of prey, but even this spectacular creature was dwarfed by *Teratornis incredibilis* – a well-deserved name for a species with a truly incredible 17 ft wingspan!

In 1979, however, the monster bird to end all monster birds made its debut. Unearthed several years

earlier as a fragmented partial skeleton at a site roughly 100 miles west of Buenos Aires, Argentina, by La Plata palaeontologists Drs Rosendo Pascual and Eduardo Tonni, and dating from the late Miocene (5–8 million years ago), this gargantuan teratorn was christened *Argentavis magnificens* – 'magnificent Argentine bird'. It also necessitated a total rethink of the maximum size attainable by a flying bird – and little wonder, for its fossils revealed that *Argentavis* was around 11 ft long, 5 ft tall, 265 lb in weight (equivalent to an adult female ostrich!) and possessed a scarcely-conceivable wingspan of 23–25 ft!

It scarcely needs to be pointed out that if *Argentavis* were alive today, in terms of dimensions it would correspond very effectively with those of the really large Big Birds on file. Contrary to initial speculation, further studies have confirmed that *Argentavis* would have been able to become airborne (provided that it received sufficient assistance from strong winds), although it is likely that for much of its time in the air it would have relied upon thermals to support it in a lazy, soaring, gliding mode of flight, with only occasional, intermittent periods of flapping flight – thereby resembling the overland flight of condors, comparable once again with reports of Big Birds.

It is hardly surprising, therefore, that an undiscovered descendant of this bird, or at the very least a modern-day version of *some* form of teratorn, is the favourite identity for Big Birds among cryptozoologists. And as far as sightings of giant soaring raptorial birds are concerned, I too agree that this identity provides the closest correspondence. Reports featuring Big Birds engaged in abducting children, adults, whales, or any other large prey victims, on the other hand, pose a very real dilemma.

Although teratorns are placed in a separate family from the cathartids, they are more closely allied to this group of carnivorous birds than to any of the others, sharing with them an evolutionary descent from storks. As a consequence, one morphological feature wreaks havoc with attempts to cast these giant species in the mould of avian abductors. Just like cathartids, their long-toed feet were extremely weak – structurally, they were wholly incapable of seizing and bearing aloft even very insubstantial prey. If anything, their feet were even weaker than those of the cathartids. This is because the teratorns were closer anatomically to the storks than the cathartids are. For example, as revealed by studies on teratorns by Tonni and Dr Kenneth Campbell from the Los Angeles County Museum, the structure of these birds' pelvic girdles and hind limbs strongly indicates that their terrestrial mode of locomotion resembled that of storks rather than cathartids. That is to say, teratorns were probably agile on the ground and favoured a more active mode of feeding than the cathartids, stalking prey on foot instead of seeking carrion from the air. In addition, the construction of their elongated hooked beak implies that they were predators that consumed their prey whole; such a beak would not have been capable of tearing pieces of flesh from carcasses.

Cryptozoological sceptics who denounce the existence of Big Birds claim that such enormous creatures would require appreciable supplies of large prey in order to sustain their huge bulk. What is known of the teratorns, however, suggests otherwise. In order for them to consume their victims whole, these giant birds evidently did not prey upon very large animals. As Campbell and Tonni pointed out, the skull dimensions of *Argentavis* (about 2 ft long and 6 in wide) suggest that this species could only engulf creatures up to the size of hares (about 1 ft long and 10 lb in weight), and Merriam's teratorn probably subsisted upon frogs, lizards, nestlings, and fledgeling birds – a far cry from the megafauna predation envisaged by the Big Bird sceptics.

Certainly, amid the vastness of the North American continent a modern-day teratorn would have no problem in obtaining sufficient quantities of its preferred mini-prey.

How many types of Big Bird are there?

From the above discussion, it is clear that no single species can be satisfactorily identified as the modern-day Big Bird. On the contrary, its file comprises a heterogeneous collection of reports featuring several different species of bird – and the same appears to be true for the thunderbird. I believe that, like many other legendary animals, the thunderbird is a non-existent composite, deriving from Amerindian observations of at least three different species, whose most striking attributes gradually became amalgamated in the telling and retelling of myths to create this awesome entity. Its enormous size stemmed from sightings of a living, undiscovered species of teratorn, its general appearance was based upon the California condor as seen during those far-off times when it was abundant and widespread, and its formidable prey-seizing abilities were inspired by those of the golden eagle.

The Big Bird of the present day is a similar mosaic of separate species. Once again, sightings of aircraft-sized monsters soaring high in the skies can only refer to a still-undiscovered species of teratorn. True, some such observations in this category may be

based upon exaggerated size estimates on the part of the observers, who in reality have spied nothing more startling than vultures or eagles, or the California condor in earlier days. However, there are many reports of gigantic birds from eyewitnesses well equipped for accurately estimating flying objects – notably pilots. Also, terrestrial encounters, such as those of Lyman and Akeley, who were close enough to their respective birds to obtain reliable assessments of their size (Lyman achieved this by measuring the width of the road that had been spanned by the bird's outstretched wings), are of great value in confirming that Big Birds of genuinely huge size are a reality.

Some of the smaller Big Birds are assuredly nothing more than native species spied unexpectedly or by observers unfamiliar with them, and the abducting contingent of Big Birds must surely feature large golden eagles – as long as we limit our options to *native* species. However, among the category of persons who enjoy keeping potentially dangerous wild animals as pets (which include such formidable exotica as big cats, highly poisonous snakes, and tarantulas), birds of prey are particularly popular. Considerable numbers, many belonging to non-native species, are currently owned in North America.

Inevitably, there will be escapes (which will go unreported if the birds have been kept illegally), as well as deliberately engineered releases by owners no longer so enamoured of their unusual pets, and I consider it likely that some of these have swollen the already bulging dossier of Big Bird sightings.

One species that particularly impresses me in relation to this possibility is the harpy eagle *Harpia harpyja*, whose native distribution extends from southern Mexico to northern Argentina. Weighing 16–17 lb with a total length of 40 in and a wingspan of 6½–7 ft, the female harpy (often as much as a third larger than the male) is widely recognized to be the world's most powerful eagle – and for good reason. With enormous talons thicker and only fractionally shorter than the terrible claws of a fully grown Kodiak bear (the world's largest carnivorous land mammal), this imperious, grey-plumed assassin can lift heavier prey than any other modern-day raptor currently known to science.

Traditionally, its largest prey was believed to be sloths, opossums, and rabbit-sized rodents called agoutis, but in 1991 California University biologist Dr Peter Sherman disclosed that while recently walking through Peru's Manu National Park he had encountered a harpy eagle preparing to devour a freshly killed red howler monkey. As he drew nearer, the bird flew away, leaving its kill behind instead of carrying it away to its nest, and when he weighed the abandoned carcass he found it to be about 15½ lb – almost as heavy as the bird itself!

This is by far the heaviest prey specimen ever recorded for the harpy eagle, and makes one wonder what the maximum size of prey victims could be for exceptional harpies approaching their species' upper size limit. Perhaps we already have a clue.

During his extensive travels in South America from the 1950s to the 1970s, film maker Stanley Brock kept two female harpy eagles, both called Jezebel. The larger of these had a 6½ ft wingspan and, as he mentioned in his books, it had a disturbing propensity for swooping after toddlers belonging to the local Indians and attempting to take hold of them with its massive talons. The existence of an escapee harpy or two in North America might solve some controversial claims of avian abduction currently cluttering the Big Bird file.

In the Lowe case reported earlier (see page 62), however, the birds in question were certainly not harpies. Indeed, the only species that bears any resemblance to them is another non-native, the Andean condor – whose size, plumage coloration, long neck, white neck ruff, and curved beak all feature in their description of Marlon's abductor. Yet even if we explain their origin as escapees or releases from captivity, there is still a major flaw with this identity – as a cathartid, this species should not be able to lift anything remotely as heavy as a 10-year-old boy.

The literature occasionally concedes that in times of desperation condors will attack livestock and prey upon newborn deer. (They will also attack beached whales spotted around the South American coastlines – a noteworthy snippet of information in view of the whale-devouring tendencies attributed to the legendary thunderbird.) Yet these still fall far short of a struggling, 65 lb boy, who would certainly have posed problems even for an oversized eagle, let alone a weak-footed cathartid.

If the Lowe case is genuine, there are only two options open. The more conservative of these argues that the birds comprised a pair of escaped or released Old World accipitrids, of which the best fit is the mighty griffon vulture *Gyps fulva*, a species with a conspicuous neck-ruff of white, and a wingspan of up to 10 ft. Its plumage is dark brown rather than black, but the evening viewing conditions during the Lowe incident might have made the birds seem darker than their true colour. The second, much more radical option is that there is an unknown species of giant accipitrid alive and well in North America – at least

as large as a condor, and perhaps as immense as a teratorn. Indeed, a teratorn-proportioned accipitrid would, uniquely, explain virtually *all* Big Bird reports single-handedly – uniting the teratorn's dimensions with the grasping capabilities of the accipitrids.

The reason why I have not given this option greater coverage here, however, is that it is unsupported by the merest fragment of physical evidence. Whereas the concept of a living teratorn in the New World has a healthy palaeontological history to substantiate its credibility (Merriam's teratorn, for instance, is known to have survived until at least as recently as 8,000 years ago, less than the blink of an eye away from the present day on the geological time scale), there is no evidence whatsoever from the fossil record to indicate that an accipitrid counterpart ever existed here. Naturally, the absence of any palaeontological precedent does not automatically deny the possibility of a creature's one-time existence, but when considering anything as revolutionary as a teratorn-sized accipitrid, I would much prefer to place its candidature on hold until (if ever) some such evidence does come to hand.

Similarly, we could hypothesize that the giant Big Birds are evolved teratorns, with feet lately modified for grasping – but since even the relatively recent Merriam's teratorn does not exhibit the slightest rudiment of such a development, this is not a very realistic proposition.

Finally, and as if matters were not already complex enough, in 1988 the Big Bird subject gained yet another source of confusion. This was the year in which the first three specimens from a series of 17 Andean condors were released in California. The reason for their introduction was so that scientists who were involved in the captive breeding of the gravely endangered California condor could test the techniques that they would be using when they eventually released captive-bred specimens of that species (a programme that began in 1992). Although a very worthy project, it does pose problems when assessing reports of Big Birds – especially those resembling Andean condors. From now on, we will never be sure whether such birds are genuine Big Birds, or simply some of these introduced condors.

It is not the first time that what had been traditionally thought of as a single type of mystery creature has ultimately been unmasked as a veritable jigsaw of many different, entirely separate pieces. I revealed a similar scenario for the mystery cats of Great Britain in my book *Mystery Cats of the World* (1989), and Heuvelmans did the same in various of his books for the Nandi bear and the great sea serpent. In the case of the Big Bird, there is a particular urgency in obtaining an understanding of the correct situation.

As emphasised by Mark Hall, the truly gigantic type of Big Bird appears to have decreased dramatically in numbers over the centuries, judging from Amerindian testimony and records dating back to North America's pioneer days. Although, as revealed in this book, teratorns are unlikely to pose any physical threat to mankind, their outward similarity to vultures would be sufficient for them to be persecuted and destroyed. There is a great need, therefore, to obtain conclusive evidence for the reality of these birds with all speed, to ensure that they do not suffer the fate of their smaller relative, the California condor.

Mankind's savagery almost destroyed one race of thunderbird – will science's indifference and dismissal condemn a second, even more spectacular version to the same tragic fate?

The curious case of the absent photograph

Even by cryptozoological standards, the Big Bird case is rather unusual, inasmuch as it has been dominated lately not by high-profile sightings or studies, but by a continuing search for an item of evidence more than a century old (and which may never have existed anyway).

In 1886, an Arizona paper called the *Tombstone Epitaph* allegedly published a photo of a dead Big Bird belonging to the gigantic thunderbird variety, nailed to a barn with its wings fully outstretched and its somewhat pterodactylian beak open. In the photo, it was apparently displayed alongside a row of six men who served as a scale for accurately estimating its wingspan – revealed to be an incredible 36 ft!

In some accounts referring to this photo, the pterosaurian similarity of its beak is greatly exaggerated – to the extent that the entire creature is likened to a huge pterodactyl. However, it is clear that those accounts have confused it with a totally separate *Tombstone Epitaph* report – dating from 26 April 1890, and featuring the supposed giant pterosaur discovered floundering in the Huachuca desert by two ranchers, as detailed on pp. 56–7.

Naturally, this unique photo would be invaluable in yielding support for these creatures' existence and in determining their identity, but the sad fact is that the photo has proved to be as elusive as the bird that it reputedly portrays. Despite extensive searches through the *Epitaph*'s files, and also those of many other publications believed or suspected by investigators to have reproduced it at some stage, the photo has never been located.

One of the most promising leads in recent years came when Fortean writer W. Ritchie Benedict recollected that the photo had been shown on an episode of a Canadian television programme called *The Pierre Berton Show*, transmitted during the early 1970s. As far as Benedict can recall, the episode featured an interview with the late Ivan T. Sanderson, who supposedly held up a copy of the photo to the TV camera, yielding a close-up shot of it. Sadly, however, Benedict has so far been unable to locate an existing copy of this episode.

Out of curiosity, during some of my own investigations concerning this missing photograph I contacted the Audio-Visual Public Service division within the National Archives of Canada, enquiring whether they could locate this episode. I subsequently learnt from research assistant Caroline Forcier Holloway, however, that she had been unable to uncover it – since there were 597 episodes in total, she would need a precise production or release date by which to identify it. Unfortunately, however, the whole crux of the problem is that we simply do not know when it was produced or released, hence this particular avenue of investigation seems to have reached an impasse.

Another possibility that seemed worthy of pursuit was that the photo had featured in the American magazine *Saga*, well known for regularly publishing articles of a Fortean nature. Fellow investigators had suggested that those issues spanning the years 1966–8 were likely ones to examine for its presence – so I duly transmitted this information to the Library of Congress in Washington DC, whose research specialist Travis Westly kindly instigated a search on my behalf. Sadly, however, after checking each issue from January 1966 to March 1969, he was unable to discover any photo or article relating to any type of enormous bird – another dead end.

Over the years, numerous people have claimed to have seen this elusive picture – which makes it all the more frustrating that no one seems to have retained a copy of it. After I had given some thought to this anomaly, an alternative scenario came to mind, one that seems eminently reasonable yet which had not previously received much attention, or any physical substantiation. There is a very real possibility that many people who are convinced that they have seen the photo may in fact have a confused, hazily recalled memory of some other, superficially similar picture instead.

Is this photograph of a marabou stork responsible for many people believing that they have seen the missing thunderbird photo? (Gerald L. Wood)

As I disclosed in a short account published by *Strange Magazine* (fall–winter 1993), a particularly noteworthy 'look-alike' for the missing thunderbird photograph appeared in the British edition of the *Guinness Book of Records* for 1972, and also in the first edition of the late Gerald Wood's *Guinness Book of Animal Facts and Feats* (1972). As seen here, it depicts a large African marabou stork *Leptoptilus crumeniferus* standing upright with its extremely large wings (which can yield a wingspan in excess of 10 ft) held outstretched by some native tribesmen flanking it, and with its startlingly pterodactyl-like beak open wide.

This picture thus incorporates several features reputedly present in the thunderbird photograph – a very big bird, with a pointed pterodactyl-like beak, and an extremely large wingspan, whose wings are outstretched, and flanked by various men.

The following points need to be borne in mind here. Firstly, this photo is a very old one – I learnt from Gerry's widow, Susan Wood, that it had been in a collection of pictures and postcards that he had already amassed by the early 1940s (hence it may date back as far as the early years of this century). Secondly, Gerry's book and the *Guinness Book of Records* are world-wide best-sellers. Thirdly, this photo may well have appeared not only in the latter book's English version but also in many (if not all) of its other versions around the world. In short, many people will have seen it, and some may have been unconsciously influenced by its striking image when trying to recall the missing thunderbird photograph.

On the assumption that it did exist (and some investigators are seriously beginning to wonder about this!), the search for the real thunderbird photo continues apace, leaving one to ponder the inevitable question? Which (if either) will be found first – the thunderbird photo, or the thunderbird itself?

The monstrous *makalala*

No one doubts that the tallest species of bird alive today is *Struthio camelus*, the ostrich – no one, that is, except for the Wasequa tribe, who inhabit a region of Central Africa eight to nine days' journey from the coast of Zanzibar.

According to a report by Count Marschall (*Bulletin de la Société Philomatique*, 1878–9), as recently as the 1870s these people averred that their territory harboured a monstrous bird even taller than the 8-ft-high ostrich, equipped with very long legs, the head and beak of a bird of prey (which it puts to good use when feeding on carrion from animal carcasses) and the ability to take to the air in sustained, powerful flight. Also, each of its wingtips bears hard plates composed of a horny, compact substance, and when it strikes its wings together they produce a very loud noise, earning this bird its local name – *makalala* ('noisy').

The *makalala* is said by the Wasequas to be very fierce, but can be killed if the correct strategy is employed. Engaging upon an extremely hazardous version of 'playing possum', the would-be assassin has to lie on the ground and feign death, until the *makalala* approaches close enough to seize the supposed human carcass – whereupon the latter must reanimate himself instantly and deliver the fatal blow before the *makalala* realizes its mistake!

So far, this could all be discounted as fanciful native folklore, but physical remains of the *makalala* may have been recorded too. Marschall mentioned a Dr Fischer, who saw in Zanzibar an object that he identified unhesitatingly as a rib from some form of gigantic bird. Narrowing from one end to the other, this alleged rib had a width of 8 in at its widest end, and was just under 1 in at its narrowest end. Unfortunately, Marschall did not record whether Fischer sent it to a scientific institution for conclusive identification and retention.

However, Marschall did record another possible source of *makalala* remains, for he noted that native chiefs placed *makalala* skulls on their heads, using them as helmets! Could any of these bizarre examples of protective headgear still be owned today by Wasequa tribesmen?

Assuming, against all the odds, that the *makalala* is real, that the frightening scenario of a carnivorous bird taller than the ostrich surviving into historic times near the island of Zanzibar is not a grotesque fantasy but a sober fact, what could it be?

With flagrant disregard for zoogeographical dictates, it readily recalls the phorusrhacids or terror birds – an aptly-named taxonomic group of huge flesh-eating birds that attained their zenith with a gigantic species from Florida called *Titanis walleri*.

The last of their line, this 10–12-ft-high horror died out a mere 10,000 years ago. However, these fearful birds were flightless, as their wings were vestigial, and their fossil remains have only been uncovered so far in North and South America, and Antarctica.

Even so, could the *makalala* be an undiscovered modern-day species? There is one notable precedent for such speculation, because some zoologists consider it plausible that a *living*, flying species of phorusrhacid-related bird is already known from Africa – that strange, stork-like bird of prey called

the secretary bird *Sagittarius serpentarius*. Although it is commonly classed as an aberrant raptor, egg albumen comparisons suggest a closer taxonomic allegiance between this species and a pair of South American birds known as seriemas – which are the last surviving members of a phorusrhacid-allied family.

Certainly, the secretary bird affords a compelling correspondence to the *makalala*'s morphology (albeit on a rather more modest scale). Endowed with notably long legs, strong wings that support a powerful, soaring flight, plus the head and hooked beak of a bird of prey, the secretary bird constitutes a very acceptable *makalala* in miniature. Furthermore, when attacking snakes (an important part of its diet) it frequently shields itself from potentially fatal strikes with its outstretched wings, which are equipped with horny tips – claws on the tips of its 'finger bones' (phalanges), instantly recalling those of the *makalala*.

This last-mentioned likeness is particularly telling, because there are very few species of bird alive today that are equipped with these wingtip claws. Indeed, other than the secretary bird, the only ones presently known are the three species of crane-allied birds called finfoots or sun-grebes, plus a vaguely grouse-like relative of waterfowl called the black-necked screamer *Chauna chavaria* – a South American speciality. In addition, a strange pheasant-like relative of cuckoos known as the hoatzin *Opisthocomus hoazin*, again from South America, produces curiously reptile-like offspring able to crawl along tree branches by virtue of two large, mobile claws on each wing, but these are lost as the chicks mature.

Certain other birds, like the jacanas or lilytrotters, the spur-winged goose *Plectropterus gambensis*, the spur-winged plover *Vanellus spinosus*, and a pair of Antarctic endemics called sheathbills, possess horny spurs on their wings, used in combat – but these are variously sited on the 'wrist bones' (carpals) or 'hand bones' (metacarpals), not upon the finger tips.

Out of all of these species, moreover, only one – the secretary bird – is predominantly carnivorous. Could the *makalala*, therefore, be some form of extra-large secretary bird, not necessarily as tall as the Wasequas state (their fear of it would certainly inflate their estimate of its height), but much bigger than today's single known species? If so, a suitable scientific name for it would be *Megasagittarius clamosus* – 'the noisy, giant secretary bird'.

Sadly, however, even if this absorbing line of speculation is a valid one it is scarcely likely to yield a living *makalala*. A bird as large and visually distinctive as this one would be hard pressed indeed to remain undiscovered by science for long, regardless of the geographical locality involved. There do not, however, appear to be any twentieth century reports of its existence. Thus, even if the *makalala* was a reality in the 1870s, presumably it no longer survives. But that does not mean that its former existence cannot be verified. As noted earlier, among the valued possessions and relics of the present-day Wasequas there may still be one or more of the revered helmets worn by departed chiefs. Should one of these pass into the hands of an ornithologist, the lucky recipient could well find himself holding a bona fide *makalala* skull!

Giant birds from the tombs of the pharaohs

The phoenix may be the most famous feathered mystery associated with ancient Egypt, but it is not the only one. Equally mystifying is the Bennu bird, which frequently appeared in the Books of the Dead – the hieroglyphic texts that accompanied the deceased in their coffins during the Fifth Dynasty (c.2466–2322 BC) at Heliopolis. Each text was a long roll of papyrus, summarizing in picture writing the life of the deceased person alongside whose corpse it had been placed within the coffin. It also offered advice on gaining acceptance for entry into the next world, and revealed that upon acceptance the person would encounter the holy Bennu bird, who would bear his or her soul to Ra, the supreme god.

Within the picture text, the Bennu is clearly depicted as a gigantic heron – taller than a man, with long legs and pointed bill, a slender, curved neck, and a pair of very elongate plumes on its head – resembling those of the Eurasian grey heron *Ardea cinerea*.

Archaeologist Dr Ella Hoch, from Copenhagen University's Geological Museum, became curious to discover the inspiration for the noble Bennu. Perhaps it had originally been based upon the grey heron (which does exist in Egypt), but had been enlarged in the depictions to emphasize its sacred status and significant role? Alternatively, it might have been inspired by travellers' reports of the genuinely lofty goliath heron *A. goliath*, standing 4 ft tall, from Palestine. By far the most compelling possibility, however, had still to be disclosed.

In 1958, extensive archaeological studies began on the island of Umm an-Nar, in the lagoon complex of Oman's Trucial Coast. Great quantities of animal remains were eventually unearthed, which Hoch documented during the late 1970s in her museum's *Contributions to Palaeontology*. To her surprise and delight, these included some fragments comprising

the distal end of the left tibiotarsus (lower leg bone) of an enormous heron – one that was probably even taller than the goliath heron, the world's tallest living species. Other remains from this newly revealed colossus were later found, some from separate sites in the Umm an-Nar settlement, and one fragment from the Isle of Failaka, offshore from Kuwait.

The Umm an-Nar material dates from the third millennium BC, whereas the Kuwait bone is more recent, from c.1800 BC, thereby collectively yielding a span of time that wholly encompasses the Fifth Dynasty of Egypt – during which period the Bennu appeared in Books of the Dead illustrations. The model for the Bennu may therefore have been this now-extinct giant heron – a possibility not lost upon Hoch, who christened its species *Ardea bennuides*.

However, there is also evidence to suggest an even more startling prospect – that this giant heron was still alive as recently as 200 years ago.

In an *American Journal of Science* report from 1845, a Mr Bonomi disclosed that between 1821 and 1823 traveller James Burton had chanced upon three enormous conical nests, all within the space of a mile, at a place called Gebel Ezzeit, situated on the Red Sea's Egyptian coast, opposite the Mount Sinai peninsula. They had been constructed from all manner of materials, ranging from sticks, weeds, and fish bones, to fragments from what had apparently been a very recent shipwreck, and which included a shoe, strands of woollen cloth, a silver watch, and the rib-cage of a man – a victim of the shipwreck, whose remaining bones and tattered clothing were spotted by Burton a little further along the coast. The nests were colossal in size, with an estimated height (and also a basal diameter) of about 15 ft, and an apical diameter of 2½–3 ft.

Understandably, Burton was thoroughly bemused concerning their origin, until he began to question the local Arabs. They stated that the nests were those of a huge type of stork-like bird that had deserted the area not long before his arrival there.

No such bird is known here today, but, as his curiosity had been aroused by this episode, Bonomi undertook some investigations of his own, and uncovered persuasive, independent evidence in support of the Arabs' claim. Delving through the documents of early writers describing Egypt in the far-off days of the pharaohs, he came upon the description of a giant stork once native to the Nile Delta region and which, in the form of a painted bas-relief, is sculptured upon the wall within the tomb of an officer belonging to the household of Pharaoh Cheops (also called Khufu or Shufu), from the Fourth Dynasty.

According to these sources, it was a bird of gregarious habits, with white plumage, long tail feathers, and a long straight bill; the male additionally bore a tuft on the back of its head, and another upon its breast. However, these features more readily recall a heron, an egret or even certain cranes rather than a stork, and they compare well with representations of the Bennu. Is it plausible, therefore, that this 'stork' was actually *Ardea bennuides*?

Whatever its taxonomic identity, however, at the time of Pharaoh Cheops (c.2600 BC) it still survived in the vicinity of the Delta, because specimens were occasionally trapped by the region's peasantry. The nests spied by Burton were probably the product of several generations of these birds (thereby explaining their immense size) rather than just a single pair – and possibly this species' last representatives.

How tragic, and how ironic, if the Bennu, the bird that bore the souls of mankind to heaven, ultimately met its own death at the hand of mankind.

Sylviornis, and the dynasty of the *du*

The following quote is from the Reverend J.G. Wood's *Illustrated Natural History* (1863):

> [In Port Essington, northern Australia] great numbers of high and large mounds of earth exist, which were formerly thought to be the tombs of departed natives, and indeed, have been more than once figured as such. The natives, however, disclaimed the sepulchral character, saying that they were origins of life rather than emblems of death; for that they were the artificial ovens in which the eggs of the Jungle Fowl were laid, and which, by the heat that is always disengaged from decaying vegetable substances, preserved sufficient warmth to hatch the eggs.

The bird to which Wood was referring is the Australian jungle fowl *Megapodius freycinet tumulus*, belonging to a family of extraordinary gallinaceous birds from south-east Asia and Australasia called megapodes – which are renowned for incubating their eggs not by sitting upon them like other birds, but by utilizing various sources of external heat instead. Some megapodes, such as the Australian jungle fowl, erect huge mounds composed of dead plant material, into which they then deposit their eggs and allow the heat generated inside the mounds by the rotting vegetation to incubate them.

The largest megapodes are Australia's 2-ft-long mallee fowl *Leipoa ocellata* and brush turkey *Alectura lathami* – this latter vulture-headed species

creates mounds up to 9 ft in height. Yet even these species are little more than dwarfs in comparison with a spectacular relative, recently exposed as a bona fide prehistoric survivor.

To the east of Australia is the island of New Caledonia, a former French territory whose southernmost tip looks out towards a very much smaller isle nearby, the Isle of Pines. In 1976, the *Bulletin de la Société d'Etudes Historiques de Nouvelle Calédonie* published an extremely interesting paper by historian Dr Paul Griscelli, who revealed that, according to oral traditions of the Houaïlou people (one of the isle's native Melanesian tribes), this minuscule speck of land once harboured an enormous and extraordinary bird.

Their ancestors called it the *du*, and described it as a huge, aggressive bird with red plumage and a star-shaped bony casque on its head. Although unable to fly, it could run very swiftly, usually with its wings outstretched. It laid a single egg, which took four months to hatch (from November's close to April's onset), but it did not incubate the egg itself.

As expected with any item of mythology, there were certain aspects that were unquestionably fictional. In particular, it was asserted that the *du* practised a most unlikely cuckoo-like deception to avoid brooding its egg, by laying it in a hollow banyan tree used as a lair by some form of giant lizard, in order for the lizard to incubate it instead!

In stark contrast to such tall tales as this, however, the fundamental, mainstream details regarding the *du* are precise and sober, indicating that these may have stemmed from sightings long ago of some real creature. Even so, bearing in mind that many fabulous birds of monstrous form with no claim whatsoever to a basis in truth do occur in numerous myths and folktales around the world, it is none the less very possible that the *du* would have been dismissed as nothing more than just another example of such a fantasy animal, especially as there appeared to be no way of pursuing the matter further. Fortunately, the *du*'s seemingly imminent descent into obscurity was not to be.

While preparing the final draft of his paper, Griscelli received some staggering news. Excavating fossils at Kanumera, on the Isle of Pines in 1974, Paris lecturer Dr J. Dubois had disinterred some bones that had since been identified by Professor François Poplin of Paris's Natural History Museum as limb portions from a gigantic bird! Relics of the *du*? In addition, when the bones were dated by radiocarbon techniques, they were found to be no older than 3,500 years, and as humans were known to have reached the Isle of Pines prior to this period they would have been well acquainted with the birds.

The dimensions of this vanished bird's remains have shown that it was as large as the modern-day emu (5–6 ft tall), and flightless. Indeed, after studying the bones, in 1980 Poplin published a scientific description of this dramatic species (*Centre National de la Recherche Scientifique, Paris*), named by him *Sylviornis neocaledoniae*, in which he announced that, like the emu, it too may have been a ratite – that is to say, one of those widely dispersed species of giant flightless bird that also include the ostrich, rheas, and cassowaries, as well as the extinct moas, elephant birds, and mihirungs.

Three years later, however, following further researches, Poplin changed his mind and announced that *Sylviornis* was actually an immense megapode (*Comptes rendus*). Moreover, as he went on to discuss in another paper (*Geobios*, February 1985), there is an intriguing supplementary source of evidence favouring this identity, contained within the Houaïlou's mythology – for, according to their oral traditions, the *du* did not incubate its egg. Unfortunately, however, if we exclude from serious consideration their lizard-hatching legend, their folklore offers no clue as to the resulting fate of the egg.

Nevertheless, researchers seeking the answer to this riddle on the Isle of Pines might not have to look very far for it, because if Poplin's latest hypothesis is correct, the riddle's answer is readily visible in many parts of the isle, and also on New Caledonia.

Both of these islands bear a great number of very large mound-like structures, measuring up to 50 ft in diameter and as much as 5 ft in height. Constructed from materials present in their immediate surroundings (soil, particles of iron oxide, coral debris, sometimes black silicon as well), their precise nature has never been conclusively ascertained – despite almost a century of archaeological investigations. In the meantime, it has simply been assumed that they are ancient tumuli (burial mounds) erected by the islands' early human occupants. But Poplin postulated that they may really be egg-incubator mounds of *Sylviornis*, the last visible evidence of this mighty species' former existence. If ultimately verified, this identification would not only solve a long-standing topographical mystery but also demonstrate that *Sylviornis* existed on New Caledonia itself, not just on the Isle of Pines.

A mound-erecting megapode the size of an emu would have been a stunning sight, and it is one that may have persisted for much longer than originally believed. According to Dr Jean-Christophe Balouet in

Was the mythical du *a giant species of mound-building megapode?*

his *Extinct Species of the World* (1990), this species is now thought to have survived into early historical times – until at least the third century AD.

Even so, it had vanished long before its island domain was reached by Europeans – but why? After all, during his researches into Houaïlou mythology, Griscelli found that for at least a time the *du* had been deemed by their ancestors to be little less than an avian deity – a sacred creature of reverence. The punishment for killing a *du* was death, and an insignia in the shape of its casque was a symbol of great esteem, worn only by the most powerful of tribal chiefs. But, like all things, customs change, especially when eroded by changing priorities.

On as tiny an island as the Isle of Pines, food is scarcely plentiful, particularly for entire human tribes and, not surprisingly, cannibalism was prevalent in those early days of human occupation. It could only be a matter of time, therefore, before the awe-inspired taboos protecting the *du* would be weakened and violated by the more practical realization that these enormous, robust birds were actually an abundant, readily accessible source of top-quality meat. And so it was that this colossal megapode's once-exalted status plummeted precipitously, and prosaically – from the *du* as demi-god, to the *du* as dinner!

There could only be one outcome. Long before westerners could ever receive the opportunity of

witnessing this magnificent bird, *Sylviornis* had been exterminated. For many centuries it would survive merely as a curious native legend, its morphology and lifestyle preserved only by verbal transmission through successive generations of its annihilators' descendants – until the day when its bones would finally be disinterred, and the reality of the Isle of Pines' bygone feathered deity at last be confirmed beyond any shadow of doubt.

From mythical *du* to extinct *Sylviornis* – clearly not a resurrection . . . or is it? Tantalizingly, while visiting New Caledonia in 1991, Danish zoologist Lars Thomas discovered that the native people speak of the *du* as if it were still alive today, and describe it accurately. Racial memories – or *Sylviornis* survival? The latter would be a major revelation, as would the discovery in living form of any of the winged mystery beasts documented in this chapter. So keep your eyes on the skies – perhaps one day an ardent birdwatcher will succeed in adding a teratorn (or even a pterosaur?) to his life list!

STOP PRESS

JUST AS some tantalizingly dinosaurian depictions by long-demised civilizations may have been inspired not by sightings of living dinosaurs but rather by discoveries of their fossils, this same concept may well be applicable to certain portrayals of pterosaurian lookalikes. In a recent article, ISC Secretary Richard Greenwell revealed some intriguing data relevant to this prospect that had not previously been incorporated in the cryptozoological literature.

The information had originally appeared in explorer A. Hyatt Verrill's book *Strange Prehistoric Animals and Their Stories* (1948), in which he discussed the theory of fossil-inspired illustration with regard to the Aztecs' remarkably pterosaurian depictions of one of their demons – a huge flying monster called Izpuzteque. A mere artefact of imaginative artistry – or something much more deliberate, based upon palaeontological precedence? Verrill favoured the latter option, commenting: '. . . such a pure invention would have been a most amazing coincidence'. He adopted the same view in relation to some similar depictions present on a series of Cocle pottery that he had unearthed in Panama, noting:

> Not only do the drawings show the beak-like jaws armed with sharp teeth, but in addition, the wings with two curved claws are depicted. Included also are the short pointed tail, the reptilian head crest or appendages, and the strong hind feet with five-clawed toes on each.
>
> It is wholly unreasonable to assume that the pterodactyl-like figures were intended to represent birds; for even if artistic licence and imagination permitted the Indian artist to add teeth to the bird's beak and claws to the wings, he most certainly would not have given a bird feet with five toes.

Well worth noting here is that around February 1947, while navigating an estuary of the Amazon River called Manuos, J. Harrison from Liverpool was one of several people aboard who observed a flock of five huge winged creatures that were supposedly similar in appearance to pterosaurs. Flying overhead in V-formation, they each had a long neck and beak, flattened head, and a wingspan of at least 12 ft, but according to Harrison their ribbed wings seemed to be featherless, and resembled brown leather. Yet in a sketch that he drew of one of these, it bore little resemblance to a pterosaur, and was far more reminiscent of a large stork – three of which, the jabiru, maguari, and wood ibis, are native here.

Monsters From the Ancient Waters –

Living Leviathans of Sea and Lake

Leviathan that crooked serpent . . . the dragon that is in the sea.
The Holy Bible, *Isaiah* (27:1)

The famous Lough Ness, so much discours'd for the supposed floating island, for here it is, if anywhere in Scotland.
Richard Franck, *Northern Memoirs* (1658)

JUDGING FROM the enormous number of unclassifiable sea creatures reputedly spied over the years, the ocean depths must surely be among the most plausible places on this planet to harbour undiscovered prehistoric survivors. By far the most (in)famous marine monster on record is the 'great sea serpent' – for, despite being reported from the earliest times and from all around the world, its very existence, let alone its likely zoological identity, has incited heated discussion and dissension within the scientific community for centuries. Yet with a bulging dossier containing hundreds of separate eyewitness accounts, many from highly responsible and respected observers, there is clearly a case to answer.

Those zoologists willing to accept its reality agree that more than one species is involved, because the eyewitness descriptions are too disparate for any single species to explain them. This is also applicable to the subject of lake monsters – unidentified beasts of many forms reported from inland bodies of freshwater world-wide.

Some reports of ostensibly mysterious water monsters are apparently unusual or mistaken observations of known creatures – otters or sea lions swimming in a line, rarely-spied species of whale or fish, colonial invertebrates of larvacean or thalliacean (salp) identity with which few non-specialists would be familiar, and even non-animate phenomena such as waterspouts, floating algal mats, or temperature-generated optical illusions. Others may feature animals wholly unknown to science, such as strange giant seals, or gigantic eels.

Sometimes, however, the creatures involved appear strikingly similar to certain animals officially believed to have died out millions of years ago. As these water monsters may therefore be prehistoric survivors, it is with these this chapter is concerned.

Plesiosaurs and periscopes

The most famous of all prehistoric aquatic beasts are undoubtedly the plesiosaurs, which, although dominating the seas during the Mesozoic Era to much the same extent as the dinosaurs ruled the land, were not themselves dinosaurs (despite their frequent media appellation of 'aquatic dinosaurs'). They were instead the predominant members of an entirely separate reptilian subclass, the sauropterygians. During an early stage in its evolution, the plesiosaur lineage diverged to yield two morphologically distinct groups – the pliosaurs, with short necks and long heads, and the true plesiosaurs, with long necks and short heads. The pliosaurs are dealt with elsewhere in this book (p. 115), so, for the purposes of convenience, from here onwards it should be understood that all mention of plesiosaurs refer specifically to the true plesiosaurs unless otherwise stated.

A surviving species of plesiosaur is unquestionably the most popular identity for one of the major morphological categories of water monster, generally termed the long-neck, whose basic outline as seen above the water surface is often likened by eyewitnesses to a periscope or umbrella handle. Such creatures include the following selection.

Model of a plesiosaur at Milwaukee Museum. (Loren Coleman/Fortean Picture Library)

Morgawr and other long-necks of sea and shore

A typical example of a marine long-neck was seen at close range one sunny day in August 1910 by Orkney wildfowler W.J. Hutchinson, his father, and his cousin, while sailing to a series of exposed rocks in Meil Bay called the Skerries of Work. To their surprise, a shoal of whales suddenly leapt out of the water, fleeing the area in such uncharacteristic haste that the men were worried that the resulting disturbance would capsize their boat. Once the whales had departed, Hutchinson's father, who was steering, looked ahead, hoping to catch sight of the Skerries, and spied something else instead – something so extraordinary that all thoughts of wildfowling were instantly forgotten. As Hutchinson later recalled:

> I heard him say, 'My God boys, what's that?', pointing ahead. I looked up and saw a creature standing straight up out of the sea – with a snake-like neck and head, like a horse or camel!

Hutchinson was so frightened by this apparition that he reached for his gun and pointed it at the creature's head, but his father wisely prevented him from shooting. Instead, they sat quietly and watched it, from a distance of less than 100–150 yards. They estimated the length of its neck above the surface to be at least 18 ft. Dark brown in colour with lighter bands, it widened gradually towards the water surface until it was roughly as thick as a man's body, but in overall appearance it was so slender that the dark-coloured head perched on top seemed disproportionately large. After about five minutes, the beast slowly submerged, disappearing vertically beneath the water, but so gently that it made no splash at all.

A sea monster swimming with its head and tall vertical neck above the water surface like an animated umbrella handle was observed through binoculars on 20 April 1920 by Thomas Muir, third officer aboard the Royal Mail Steam Packet Company's ship *Tyne*, travelling near St Paul's Rocks (500 miles off the coast of South America) towards the end of its journey from Casablanca to Rio de Janeiro. According to Muir, the beast turned and looked at the ship, then moved closer until it was about 400 yards away. Still watching the ship, it cruised alongside on a parallel course for about five minutes, its head raised 30–35 ft above the surface, before curving its neck down like a swan and diving out of sight under the waves.

At around 4.30 pm on 31 October 1922, an unidentified animal was spied in the Gulf of Mannar between India and Sri Lanka by various crew members aboard the steamer *Bali*. According to the fourth officer, P. Kruyt, its head and neck recalled those of a giraffe but were even larger. The neck did not taper but was of uniform thickness throughout, which he estimated to be about 18 in, and the head terminated in a blunt point. The portion of its neck that emerged above the water surface was roughly 15 ft long and grey-green in colour. The creature remained visible for about two minutes before diving head first back into the water.

One of the most remarkable long-neck reports is that of the *Fly* sea serpent – due to the exceptionally good sighting of the creature afforded by the transparent quality of the water through which it was seen.

To quote Edward Newman (*The Zoologist*, February 1849):

> Captain the Hon. George Hope states that, when in H.M.S. *Fly*, in the gulf of California, the sea being perfectly calm and transparent, he saw at the bottom a large marine animal, with the head and general figure of the alligator, except that the neck was much longer, and that instead of legs

> the creature had four large flappers, somewhat like those of turtles, the anterior pair being larger than the posterior: the creature was distinctly visible, and all its movements could be observed with ease: it appeared to be pursuing its prey at the bottom of the sea: its movements were somewhat serpentine, and an appearance of annulations or ring-like divisions of the body was distinctly perceptible.

A sketch done of the creature also included a long tapering tail.

A famous marine long-neck of more recent times is Morgawr (Cornish for 'sea giant'), the frequently sighted sea monster of Cornwall's Falmouth Bay. Reports of such a creature date back many years, but Morgawr did not make headline news until 5 March 1976. This was when the *Falmouth Packet* newspaper published two extraordinary photos sent in by a pseudonymous reader who signed her accompanying letter 'Mary F'.

Morgawr, the Falmouth Bay sea serpent, as photographed by 'Mary F'. (Fortean Picture Library)

The photos depicted what seemed to be a dark, bulky sea monster with humps along its back and a long curving neck bearing a very small head at its tip; no background details were visible. In her letter, published alongside the photos in the newspaper, 'Mary F' claimed that they were of a sea monster that she had spied about three weeks earlier from Trefusis, Falmouth, and that the absence of background detail was due to the sun shining into the camera and a haze upon the water. The portion of the beast visible above the sea's surface was 15–18 ft long, and was black or very dark brown, but had only remained there for a few seconds before submerging. She described it as looking:

> . . . like an elephant waving its trunk, but the trunk was a long neck with a small head on the end, like a snake's head. It had humps on the back which moved in a funny way . . . and the skin seemed to be like a sealion's . . . As a matter of fact the animal frightened me. I would not like to see it any closer. I do not like the way it moved when swimming.

For many years, these remained the most spectacular, if enigmatic, of all sea serpent photos, especially as the identity of 'Mary F' was never uncovered. In 1990, however, after an exhaustive investigation of these and certain other mysterious photos, Maryland's renowned Fortean researcher Mark Chorvinsky, a university-trained expert in cinematic and other photographic special effects, expressed serious doubts as to their authenticity – in a detailed published account (*Strange Magazine*, Fall 1991), he considered that the cryptic 'Mary F' might actually be Tony 'Doc' Shiels, an Irish mystic and self-confessed trickster.

Yet even if these photos are indeed fake, they cannot discredit the many reports from independent eyewitnesses attesting to the spasmodic occurrence off the Cornish coast of a classic long-neck sea monster. In January 1976, for instance, Truro dental technician Duncan Viner had been walking along Falmouth's coastal path observing sea birds when he saw what he assumed at first to be a whale – a dark hump rising up through the water. As he watched, however, a long neck suddenly appeared, turned around, then sank back beneath the waves. The creature seemed to be 30–40 ft long, and was several hundred yards off the beach.

Later that same month, London holidaymaker Amelia Johnson was walking near Rosemullion Head when she saw emerging from Falmouth Bay's waters '. . . a sort of prehistoric dinosaur thing, with a neck the length of a lamp-post'. And a very detailed Morgawr sighting was made on 10 July 1985, off Portscatho, by Dorset writer Sheila Bird and her scientist brother Dr Eric Bird, visiting her from Australia's Melbourne University.

It was about eight o'clock in the evening, and they were relaxing on the cliff top to the west of Portscatho, when Dr Bird leapt to his feet in amazement, having spied an extraordinary creature propelling itself smoothly and rapidly in an easterly direction just offshore. Estimated at 17–20 ft in length, with grey, slightly mottled skin (ascertained with the help of two passers-by with binoculars), it had a long neck, small head, and large hump protruding out of the water, as well as a long muscular tail visible just beneath the

surface. The two Birds watched it for several minutes, its head held high as it swam gracefully through the water – then suddenly, without any warning, it sank vertically beneath the water and vanished, creating no disturbance to mark its former presence.

Lakes, lost worlds, and long-necks in South America

Freshwater long-necks have been reported from well over a hundred different lakes throughout the world, and include the following examples among their number.

The most publicized lake-dwelling long-neck from South America was the so-called Patagonian plesiosaur, which at the height of its fame even received coverage in the august journal *Scientific American*. In January 1922, Dr Clementi Onelli, Director of Buenos Aires Zoo in Argentina, received a letter from a Texan adventurer called Martin Sheffield, who had spent a number of years as an itinerant living off the land in Patagonia. In his letter, Sheffield claimed that some nights previously, after pitching his hunting camp close to a mountain lake near Esquel, he had encountered a strange animal:

> . . . in the middle of the lake, I saw the head of an animal. At first sight it was like some unknown species of swan, but swirls in the water made me think its body must resemble a crocodile's.

Not surprisingly, Sheffield's description conjured up images of plesiosaurs in Onelli's mind, and also reminded him of a somewhat earlier report. In 1897, he had spoken to a farmer living on the shores of Patagonia's White Lake, who informed him that a strange noise was frequently heard there at night, resembling the sound that a cart would make if dragged over the lake's pebbly shore – but that was not all. On moonlit nights, a huge beast could be seen in the lake, with a long reptilian neck that would rise high above the water – unless disturbed, whereupon it would instantly dive and disappear into the depths.

Heartened by these and other reports, Onelli organized an expedition to follow them up, which duly set forth on 23 March 1922, led by José Cihagi, superintendent of Buenos Aires Zoo. It eventually reached the lake where Sheffield had experienced his sighting, but with the approach of winter further explorations were abandoned and the expedition returned to Buenos Aires. Apart from a tango and a brand of cigarettes that were both named after it, nothing else of note emerged regarding the putative plesiosaur of Patagonia for many years – until the 1980s, since when numerous reports have been aired by the media concerning a similar water beast, nicknamed Nahuelito, which is said to inhabit Nahuel Huapi, a 318-square-mile lake ensconced amid the Andes winter sport resort of Bariloche.

Auyan-tepui is a lofty table mountain in Venezuela, the inspiration for Sir Arthur Conan Doyle's dinosaur-populated novel *The Lost World*. In 1955, however, during an expedition to this isolated plateau, naturalist Alexander Laime allegedly sighted some creatures that gave the more optimistic zoologists reason for believing that the theme of Conan Doyle's novel may not be wholly fictitious after all. While searching for diamonds in one of the rivers at the summit of Auyan-tepui, he spied three very strange beasts sunbathing on a rocky ledge above the water. Superficially seal-like, closer observation revealed that they had reptilian faces with disproportionately long necks, and two pairs of scaly flippers. Drawings that he made of them at that time are readily reminiscent of plesiosaurs. There is, however, one very unexpected feature – none of them was more than 3 ft in total length.

Could they have been young specimens? Laime believed that they were adults, but belonging to some pygmy species of plesiosaur, whose small size has enabled it to persist into the present day without disturbing the ecological balance of this enclosed system. More conservative opinions favour some long-necked type of otter as a more plausible identity, whereas others have even likened them to a crocodile.

In 1990, Auyan-tepui played host to an expedition led by biologist Fabian Michelangeli and including scientific reporter Uwe George, for whom this was his sixth exploration of a South American tepui. During their visit, Michelangeli and his brother Armando spied a silhouette of a beast closely resembling those reported by Laime, but as they drew nearer to investigate the beast plunged into the river and disappeared from view. As for various German TV reports claiming that one had actually been captured, these were inspired by the procurement of nothing more spectacular than a common species of lizard.

'Giant newts' of Siberia

One of the most distinctive long-necks ever reported was spied in 1964 by Soviet biologist Dr Nikolai Gladkikh, while visiting Lake Khaiyr, a remote body of water in the east Siberian province of Yakutia and largely ignored by science until then. Standing at the lakeside one early morning, Gladkikh caught sight of a very big and extraordinary beast on the opposite

shore. Its huge body was bluish-black in colour, with two pairs of ill-defined limbs, a long sturdy tail and an elongate gleaming neck carrying a small head at its tip. Its most eye-catching feature, however, was the low, triangular dorsal fin, containing vertical rays, that ran from the base of its neck to the beginning of its haunches.

Sketch of the Lake Khaiyr monster by eyewitness Dr Nikolai Gladkikh. (Fortean Picture Library)

By the time Gladkikh had alerted his colleagues to come and see it, this unidentified mystery beast had vanished, but he was able to prepare a good sketch. Before the end of their visit the expedition's leader and two other members were able to confirm the sketch's accuracy, when they briefly saw the head and dorsal fin of the monster appear above the surface at the centre of the lake, and watched its long tail furiously lashing the water. Its dorsal fin sets this animal well apart from any species currently known to science, but it is not the only time that such a feature has been reported for long-necks.

In 1942, two Soviet pilots surveying this lake reported seeing two bizarre animals that were later likened to giant newts. As some newts, exemplified by males of the familiar *Triturus cristatus*, bear a conspicuous dorsal crest, this lends support to Gladkikh's story.

Also on record from Yakutia is a long-necked, snake-headed monster reputedly inhabiting Lake Labynkyr. According to Anatoly Pankov, a chronicler of mysterious happenings in this part of the world, the creature supposedly raised its neck above the lake's surface in full view of a team of geologists sometime during the 1950s, and lunged upwards to snare a flying bird between its jaws while watched by a number of astonished reindeer hunters.

Storsjöodjuret – *Sweden's big-eared water cow*

A conspicuous tourist attraction at the mountain town of Östersund in central Sweden is a monument (nowadays daubed with graffiti) depicting the *storsjöodjuret* – the long-neck of Lake Storsjön, which is the deepest lake in Sweden and has a surface area of 176 square miles. With sightings dating back to 1635, extensively reported during the nineteenth century, studied by zoologist Dr Peter Olsson, and spasmodically occupying the cryptozoological news headlines in more recent times, it is one of several aquatic monsters referred to by cryptozoologist Ivan T. Sanderson as Swedish water cows.

According to Sanderson's description, the Storsjön example is '. . . very large with greenish-looking shiny skin, a long thin neck at least 10 ft long, small head, the usual bumps, and a capacity for rushing headlong about the lake at the speed of a motor boat, leaving a huge wake, and making sudden sharp turns.' Its eyes, moreover, are said to be very large, and it has two pairs of large flipper-like limbs.

One of the most peculiar characteristics of this long-neck is its 'ears' – a somewhat inadequate name for the pair of strange head-borne projections reported by several eyewitnesses. One investigator, the then curator of Östersund's Jämtlands läns Museum, wrote in 1965 to Nessie authority Tim Dinsdale, describing the *storsjöodjuret*'s 'ears' as '. . . great fins of the back or of the head, possibly ears, described as little sails, which can be laid tight on to the neck. These fins or ears have an estimated diameter of 1 metre.'

They would therefore be extremely large ears! More likely is that they are exposed portions of a

much larger dorsal crest, whose remaining portions are hidden beneath the water surface – thus recalling the Lake Khaiyr monster's crest.

In 1894, an attempt was planned by a local company to capture the *storsjöodjuret*, using a very large ovoid spring trap (measuring 46 in by 27½ in) baited with piglets, and watched by a Norwegian harpooner – but nothing transpired. Today, the catching tools are on display in the Jämtlands läns Museum. In summer 1987, a much more scientific (but, alas, no more successful) hunt for the monster took place, launched by this same museum.

Graffiti-defaced sculpture of the Lake Storsjön monster at Östersund, Sweden. (Lars Thomas/Fortean Picture Library)

Champ-ion long-neck of the USA

Looming large on the long-neck front in North America is Champ, the monster of Lake Champlain – an immense body of fresh water 109 miles long, up to 11 miles wide, and with a water surface area of 440 square miles, straddling the borders of Vermont and New York, but also nudging its northernmost tip into Quebec, Canada. Reports of a huge horse-headed monster (the *chaousarou*) inhabiting this massive lake stretch back into Amerindian lore, and it has been spied for decades by local westerners, but only since the 1960s has it attracted international interest. Those sightings featuring a head and neck as well as the obligatory hump(s) – accounting for about 37 per cent of all Champ sightings, according to veteran Champ investigator Joseph W. Zarzynski – place it firmly within the long-neck category.

One afternoon in 1976, for example, while at Treadwell Bay, north of Plattsburgh in New York, at a distance of 300 yards Orville Wells saw what he later called '. . . a huge animal or whatever swimming very steadily and slowly across our bay . . . It appeared as something out of the past or a prehistoric monster.' According to his description, it was 20 ft long, and brownish in colour, with a long neck, upright head, and two humps.

Just after 7.00 pm on 14 June 1983 and at a distance of 550 ft, Tim and Dick Noel had a sighting of Champ off Vermont's North Hero Island. Once again, a long neck was clearly spied, followed by at least two (possibly three) humps, as the dark-coloured animal moved through the water. They estimated its total length at 20–25 ft, and its height at 3–4 ft.

On 27 August 1983, at a distance of 900 ft, Eva Gauvin and a friend caught sight of Champ from Camp Marycrest, Grand Isle, Vermont. Before it submerged, they were able to discern a long neck, two humps, and estimated a total length of 20–25 ft.

The most important Champ sighting to date, however, must surely be that of Sandra Mansi and her husband Anthony, which took place just after midday on 5 July 1977 somewhere around St Albans, Vermont, at a range of 100–150 ft. Believed by them to be 15–20 ft long, with a head and neck raised 6–8 ft above the water surface and very dark, fairly smooth-looking skin, what makes this particular appearance so important is that it was actually photographed – Sandra Mansi succeeded in snapping a colour Polaroid of it before it disappeared again. Although far from lucid, it had captured the image of what does appear to be the head, upright neck, and back of some form of large, brown-coloured creature.

Professor Paul H. LeBlond, from the University of British Columbia's Department of Oceanography, is a renowned expert in the field of wave dynamics, and after carefully studying the Mansi photo in an attempt to gauge the likely dimensions of the object depicted, he announced in 1982 that the lower and upper limits for its water-line dimension range from 16 ft to 57 ft 4 in. Moreover, we must remember that this size range is only for the *photographed* portion of the object – it does not include whatever portion remained invisible beneath the water surface. Consequently, whatever it is, it is certainly very large.

In September 1993, a Japanese team was on site at Lake Champlain, recording a TV documentary and cruising the lake armed with video cameras and sonar equipment, but nothing emerged – except, that

is, for a new, wholly preposterous Champ identity. According to an article detailing the team's search in *USA Today* (8 September 1993), some Champ believers are now contemplating the credentials of *Tanystropheus longobardicus* – a superficially lizard-like, *terrestrial* reptile from central Europe's mid-Triassic period (about 230 million years ago). Its disproportionately long neck is the only feature that allies it to Champ sightings, but whereas Champ's neck is apparently quite flexible, *Tanystropheus*'s neck was extremely rigid. For although it was over 9 ft long (as compared to the beast's brief, 2-ft-long body), it only contained ten, extremely long, rod-like bones.

Life-sized reconstruction of Tanystropheus – *a highly unlikely identity for the Lake Champlain monster. (Dr Karl P.N. Shuker/reproduction courtesy of Drayton Manor Park & Zoo)*

One of the most frequently cited of the early Champ sightings was made in July 1609, and by none other than the lake's European discoverer, Samuel de Champlain. According to a report by historian Marjorie L. Porter (*Vermont Life*, summer 1970), de Champlain had described the beast as about 20 ft long, serpent-like but as thick as a barrel, with a horse-like head. In other words, a description that compares well with those given by modern-day eyewitnesses, and which has since been requoted in many other publications. More recently, however, a very different account of his sighting has emerged, contained in no less authoritative a source than *The Works of de Champlain* (edited by H.P. Biggar). In de Champlain's own words, he saw some *chaousarou*:

> . . . about five feet long, which were as big as my thigh, and had a head as large as my two fists, with a snout two feet and a half long, and a double row of very sharp, dangerous teeth.

Whatever these were, they bore no resemblance, and hence no relationship, to Champ. From de Champlain's description, they were most probably specimens of a voracious, 5-ft-long fish known as the garpike *Lepidosteus osseus* – a taxonomically significant creature, as it belongs to a group of archaic, armour-plated fishes called ganoids, which mostly died out many millions of years ago. Only a few modern-day species are known, all of which inhabit North American rivers and lakes. How ironic for one of the most celebrated of all Champ sightings to have featured a bona fide prehistoric survivor – but the wrong one!

Issie – a lesson in long-neck deception

Nowadays, the image of the long-neck has become so familiar in the context of water monsters that, outside cryptozoological circles, it has become something of a stereotype – applied to all such creatures regardless of whether or not this is justified by the eyewitness accounts on file. Issie, the monster of Japan's Lake Ikeda, is a case in point.

Sightings of this water beast generally feature at least two black humps moving swiftly through the water, often accompanied by noticeable water disturbance, as with the 60–90-ft-long black object observed by about 20 people on 3 September 1978, the multi-humped shape photographed by a Mr Matsubara on 16 December 1978, what would seem to be two separate Issies filmed together on video-tape by Hideaki Tomiyasu on 4 January 1991, and the 15–30-ft black form videoed during the early afternoon of 21 October 1990 by Kazuo Kawano. A long neck, however, is conspicuously absent from such reports. Yet a statue of Issie erected near the lake on Kyushu depicts the monster as a dragonesque long-neck, more akin to a certain Caledonian loch monster than to anything reported from Ikeda.

Statue of Issie, inappropriately represented as a long-neck, near Lake Ikeda, Japan. (Shin-ichiro Namiki/Fortean Picture Library)

A long-neck called Nessie

Speaking of Caledonian loch monsters: the most famous mystery beast of *any* type, and the archetypal long-neck, is undeniably the elusive monster of Loch Ness in the Scottish Highlands. Its distinguished history supposedly dates back at least to the sixth century AD, when a mysterious water beast was encountered by St Columba (though in River Ness, not Loch Ness, and at about 580 AD, rather than 565 AD as given in many other works).

Since 1933, which saw the creation of a new main road (the A82) overlooking the northern shoreline of this immense but hitherto secluded lake, Loch Ness has hosted countless sightings of what many people believe to be huge but unremittingly reclusive water beasts with long necks, small heads, and humped backs – and prior to the A82's arrival there had always been local beliefs in the existence within the loch of strange, sometimes frightening animals generally referred to as kelpies or water-horses.

Unless they are not resident here but migrate to and fro from the sea via the River Ness, or unless they habitually 'loch-hop' from one lake to another, any long-necks that do occur in Loch Ness on a long-term basis must comprise a viable population. Since Loch Ness is more than 22 miles long, up to 1½ miles wide in places, over 700 ft deep, with a volume of about 263 billion cubic feet and a diverse biota readily able to sustain such a population, problems of adequate space and food are easily dismissed – unlike the riddle of these beasts' identity.

As the Loch Ness monster's eventful history has been thoroughly examined in many full-length Nessie studies currently in existence, this necessarily brief coverage will concentrate upon those aspects of the beast most relevant to long-neck identification.

The most popular image of Nessie is that of a slender neck and one or more humps rising briefly up above the loch's surface – which, with minor variations, has been reported by numerous eye-witnesses over the years, as shown by the following selection of sightings.

On 12 July 1934, naval officer Captain F.E.D. Haslefoot was walking along a disused railway line leading from Fort Augustus to Inchnacardoch Point when he saw two oval black humps in the loch, moving slowly towards the shore. They were roughly 8 ft apart, and 1 ft or so above the water surface, but as he watched they suddenly turned and travelled away up the loch for about 200 yards at a speed of about 10 knots, one in front of the other with the anterior hump generating a feather-like wash, before slowing down again to around 3 knots. As he watched, a head and neck emerged in front of one of the two humps, black in colour and roughly 4 ft out of the water. Haslefoot described the head as being spade-shaped, but only saw it for a moment before the creature flicked it sideways back down into the water. After swimming leisurely until about 50 yards from the loch's shore, it submerged.

In October 1936, from a spot about three miles outside Foyers, Marjory Moir and some friends enjoyed a 14-minute view of a long-necked beast with three humps, which was apparently resting on the water surface. It was estimated by them to be approximately 30 ft long, with humps of differing sizes (the middle one was largest, the anterior one smallest) and a slender neck whose head had no discernible features and frequently dipped back and forth into the water. Then, without warning, it speeded away in the direction of Urquhart Bay, throwing up a huge wash, before returning to its original resting site.

Does this, the 'gargoyle' photo (computer-enhanced), portray Nessie's head? (Academy of Applied Science/Dr Robert H. Rines, 1975)

On 11 May 1962, from the window of a cottage at Alltsaigh, Edith Christie spied a single-humped long-neck with an egg-shaped head about 160 yards away, generating a tremendous wash as it swam rapidly northwards up the loch at the speed of a fast motor boat. Its neck was about 4–5 ft long, and a 2-ft-long greenish-black hump followed about 6 ft behind it.

During a 12-minute sighting by Fort Augustus resident Katherine Robertson and her friend, a Lutherian nun visiting from Germany, two of these creatures were seen together, and for part of that time they were no more than 300 yards away. The date was 18 August 1971, and the two women were walking along the road behind Bolum Bay, when Robertson spied an extremely large animal swimming near to the shore, but away from the Abbey, on their left. The two friends observed it crossing the bay to the loch's far side, and Robertson estimated it to be about 45 ft long, with two low humps, and a small squarish head perched upon an erect, swan-like neck. As it was progressing across the bay, Robertson's friend spotted a second, smaller long-neck, also swimming from the vicinity of the Abbey and travelling quite speedily in the direction of the larger one until it finally caught up with it on the opposite side. This second animal had the same form of head and neck as the larger one, but only one hump was visible, and the length of the creature itself was estimated to be a mere 15 ft or so. After a few moments together, the two beasts submerged.

One morning in January 1980, while the loch's waters were totally still, fisherman Donald MacKinnon viewed a long-neck for almost ten minutes with binoculars, noting three humps: '. . . and a long neck which reminded me of the submarine periscopes I'd seen in the war'.

A surprising number of reports are on file concerning mysterious, unidentified submarines appearing in lakes and stretches of ocean throughout the world, whose presence has been made known only by brief glimpses of their periscopes projecting up above the water surface. Scandinavian fjords seem particularly prone to such appearances, and there has been much discussion regarding unexplained appearances and disappearances during World War II of craft assumed (but never proved) to have been periscope-bearing U-boats.

Two very different lines of thought have been aired as to their identity. One is that they are spy vessels, covertly observing while remaining largely unobserved themselves – except for their tell-tale periscopes. The other is that they are not submarines at all – but rather that they are long-necks, which makes MacKinnon's description particularly noteworthy.

Reports of long-necks in Loch Ness continue right up to the present day. In June 1993, for example, Edna MacInnes and David McKay claimed to have watched a huge beast with a light-brown body and giraffe-like head and neck for ten minutes before it dived out of sight.

As for photos of Loch Ness long-necks, even the most striking examples have failed to sustain universal acceptance. In December 1975, a team from the Academy of Applied Science (now based at Concord, New Hampshire), led by its founder Dr Robert Rines, released two underwater photos obtained during their research at the loch in June 1975 that incited a media sensation. One seemed to show the long neck and body of a plesiosaur-like beast, and the other resembled a close-up of a horned head (this was dubbed the 'gargoyle' photo).

Some authorities, including Nicholas Witchell, later opined that the 'gargoyle' may simply be a decayed tree stump that was located and eventually dredged up in October 1987 from the area of the loch bottom where the photo was taken. Leading on from this are suggestions that the 'body and neck' photo merely depicts sediment swirling up from the loch bottom around the edge of the 'gargoyle' tree stump, whose features must have been concealed by shadow. Yet to my mind, such 'solutions' as these appear more contrived than convincing.

The greatest controversy, however, is reserved for the Loch Ness long-neck photo *par excellence* – the 'Surgeon's photo', whose image of a head and slender neck protruding up through the water is everyone's immediate mental picture of Nessie whenever the subject of Loch Ness is raised. The picture was one of two that were snapped on the morning of 19 April 1934 by Lieutenant Colonel Robert Kenneth Wilson, a London gynaecologist, after he had seen something on the loch from a spot about two miles north of Invermoriston during a car journey along the A82. Sceptics have variously attempted to dismiss the photo's 'head-and-neck' image as that of a bird, or the tail of a diving otter, or even as the dorsal fin of an out-of-place killer whale or of a giant sturgeon. During the 1990s, however, two rival allegations were made that sought to expose the photo as a blatant hoax – but as these allegations are mutually exclusive, only one can be correct, and, to be perfectly frank, I am by no means persuaded by the claims for either of them!

In 1992, the Danish weekly magazine *Hjemmet* published an article in which musicologist Professor Lambert Wilson, a former conductor of the Aberdeen Symphony Orchestra, claimed he had constructed a 'sea serpent' swimming mask comprising the famous head and neck configuration in the 'Surgeon's photo', with tiny eyeholes enabling him to see, which he had worn while swimming in the loch on a day in late summer 1934. According to his story, this is what the London surgeon, coincidentally sharing the professor's

surname, had seen and photographed. However, all other accounts concerning the taking of this photo placed the date in question in April, not during the summer. In any case, the very concept of someone swimming around in the loch with the model of a Nessie perched on top of their head is one for which I personally would be most reluctant to stick my neck out (so to speak!).

The 'surgeon's photo' of the Loch Ness monster. (Fortean Picture Library)

The second allegation received widespread publicity during March 1994, when researchers David Martin and Alastair Boyd announced that, only shortly before he died, in November 1993, expert model-maker Christian Spurling had confessed to them that the photo's image was actually that of a 1-ft-tall 'head-and-neck', constructed by him from plastic wood in January 1934 and attached to a toy clockwork submarine. This was secretly photographed (and afterwards sunk) in the loch. Surgeon Wilson (apparently fond of practical jokes, and supplied with full details concerning the model) was then recruited to publicize the photos.

Spurling claimed that he had been requested to produce this model by his stepfather Marmaduke ('Duke') Wetherell and stepbrother Ian (who also recruited Wilson as the fourth member of their conspiracy) in order to avenge the recent public humiliation suffered by Duke when he rashly identified as genuine some footprints found on the shores of Loch Ness that were soon afterwards exposed as crude fakes. (They had been produced by someone using an ashtray – *not* an umbrella stand, as erroneously given in many other publications – made from the foot of a hippopotamus!) As far as the quartet of hoaxers were concerned, there could be no better way of seeking retribution than to discredit the monster itself.

Sadly, the media's coverage in 1994 of this supposed hoax was largely uncritical – and it was left to some astute newspaper readers to point out its array of inconsistencies. First and foremost, plastic wood does not even appear to have been invented in 1934! Secondly, the type of toy submarine available at that time could not have supported such an unwieldy structure as a model of the head-and-neck without being in serious danger of overbalancing; the only way to counter this would have been to place ballast inside the submarine, which would have promptly sent it plunging down beneath the water! Thirdly, the photo shows the head-and-neck surrounded by ripples – not to be expected if the craft was moving at the time of being photographed. Fourthly, the 'head-and-neck' looks to be rather more than 1 ft tall. Indeed, based upon a comparison of the length of adjacent wind waves (with the wavelength estimated from modern results on wind waves and contemporaneous weather information), oceanographers Professor Paul LeBlond and Dr Michael Collins calculated in 1987 that the neck's height above the water level was 4 ft.

And how can the 'model submarine' identity explain the *second* 'Surgeon's photo', whose 'head-and-neck' image has a very different outline from that of the first photo?

In addition, I am always very wary of 'death bed' confessions. Why wait so long? Even the faking of one of the world's most mysterious photos is not a crime – indeed, if anything, the release of the 'truth' while the hoaxers still lived might well have guaranteed them instant fame and lucrative financial gain.

My own personal opinion regarding this episode is that the real hoax was not the 'head-and-neck' submarine but rather the *claim* concerning the 'head-and-neck' submarine. In short, the craft never existed – only the story of it, invented by a dying man still seeking revenge upon Nessie for his stepfather's humiliation all those years ago.

After all, why go to all the trouble of constructing such a craft (one that, by its very nature, is highly improbable) and perpetrating a hoax with it (with all the attendant risks of being caught in the act), when all that you need to do is to release a superficially plausible *story* of a hoax, at the end of your days – a story that cannot therefore be conclusively proved or disproved by anyone else afterwards, yet which will none the less cast for ever more a deep shadow of doubt on a photo that has become over the years one of the most famous pieces of evidence in support of the Loch Ness monster's existence? Such a story would thus achieve the desired effect to

the maximum extent yet with the minimum of effort. A hoaxed photo, or a hoaxed hoax? No one will ever know for sure.

In 1960, an amazing piece of cinefilm was shot by aeronautical engineer Tim Dinsdale at Loch Ness. After spending five unsuccessful days seeking the monster, it was now the morning of 23 April – the sixth, and final, day of his long-planned search. Driving along the loch's Foyers Bay stretch of road, he suddenly spotted a mahogany-coloured hump-like object protruding up through the water, roughly 1,300 yards away and oval in shape, with a conspicuous dark blotch upon its left side. By now he was out of the car and standing by the loch, observing the object through binoculars – and that was when it began to move.

Dinsdale began to film it at once, shooting about four minutes of black and white film with his tripod-mounted 16 mm Bolex cinecamera as what he now believed to be some form of immense living creature swam away towards the far shore, generating a distinctive v-shaped wake and submerging slowly – before suddenly changing direction, swimming southwards parallel with the shore but still submerging until it had almost vanished beneath the water. Following its painstaking analysis of this remarkable film, the Royal Air Force's Joint Air Reconnaissance Intelligence Centre (JARIC) announced that in its opinion the object in the film 'probably is an animate object' – in other words, part of a living creature, rather than a submarine, or surface craft such as a rowing boat. If so, then the creature is certainly huge, because JARIC estimated the hump to be 12–16 ft long, a cross-section through it to be not less than 5 ft high and 6 ft wide, and moving at a speed of 7–10 mph.

Although a major piece of evidence in support of an animal of truly monstrous proportions, the featureless nature of the hump filmed by Dinsdale cannot shed any light on its owner's taxonomic identity – an all too frequent problem with Nessie data.

By virtue of its objectivity, sonar evidence is considered by the scientific community to be much more persuasive than eyewitness accounts, and even photographic evidence, which, unless of exceptional quality, is open to all manner of interpretation. From the late 1960s onwards, many research teams – including those from Birmingham University, the British Museum, the Academy of Applied Science, and the Anglo-American 'Operation Deepscan' of October 1987 – have obtained important, reproducible traces of solid, seemingly animate objects encountered in midwater or near the sides or bed of the loch. They were swift-moving, exhibited profound diving abilities, measured around 20 ft in length, and were readily distinguishable from shoals of fish or inanimate objects such as vegetable mats.

These provide new insights into Nessie biomechanics and spatial distribution underwater. Once again, however, they have offered few morphological clues with which to identify its species – except, that is, for a remarkable occurrence in August 1972, which, in my opinion, yielded by far the most important evidence currently obtained in support of the Loch Ness monster's identity as a huge water beast of a still-undiscovered species.

With sonar apparatus and an underwater camera positioned in Urquhart Bay, Dr Robert Rines's team from his Academy of Applied Science were monitoring their equipment during the early hours of 8 August when a flurry of movement was suddenly detected by the sonar. From the readings obtained, this appeared to be a shoal of fishes swimming rapidly away from something solid and much larger that was following closely behind – something that moved purposefully rather than passively drifting, and which measured 20–30 ft long.

Moreover, while the sonar had been obtaining traces of the body, the underwater camera had been photographing it. When its film was developed, two consecutive frames were found to depict something that computer-enhancement techniques revealed to be a diamond-shaped, pointed-tipped object resembling a hind flipper, whose orientation had changed slightly between the two photos, suggesting movement. Estimated to be 4–6 ft long, it was attached to a much larger body, and possessed what looked like a median keel or stiffening rod.

Intriguingly, it bore little resemblance to the flippers of pinnipeds, cetaceans, or other aquatic mammals, and did not correspond to the fins of eels or other ray-finned fishes either. In fact, it strongly recalled the rhomboidal flippers of plesiosaurs.

A third photo on the 'flipper' film, little-publicized but reproduced here, may portray *two* Nessies – depicting one lying on its side with two flippers visible, and the tail of a second close by. Correspondingly, the sonar traces showed that a second 20–30 ft object had indeed been present for a time within the vicinity of the sonar equipment and camera.

What makes these results so significant, and possibly unique at present, is that, whereas eyewitness reports are subjective (and thus are open to criticism and doubts regarding their reliability and interpretation), here were two independently obtained

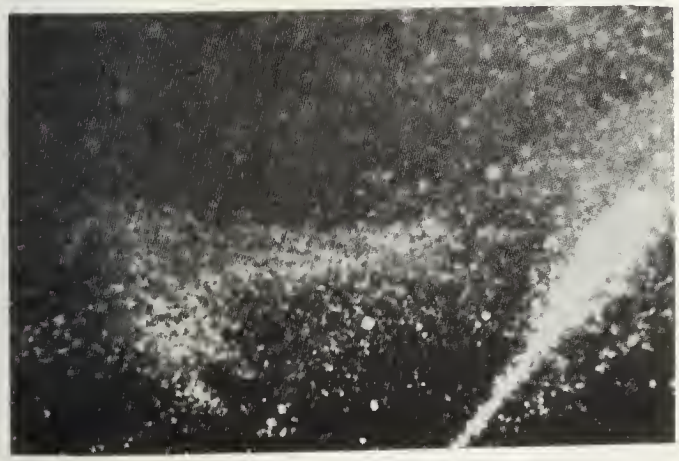
pieces of data (sonar traces and photographic film) that convincingly supported one another, and, of particular importance, were obtained by totally objective, disinterested witnesses – machines.

It was the distinctive image captured by the two 'flipper' photos that led on 11 December 1975 to the Loch Ness monster's formal scientific christening by Rines and British naturalist Sir Peter Scott, who dubbed it *Nessiteras rhombopteryx* ('monster of Ness with diamond fin'). In addition, its shape corresponded perfectly with the dark, hairless, rubbery flipper that briefly broke the surface when, in September 1970, Professor Roy Mackal and two colleagues aboard their boat spied a huge beast about 30 ft away, rolling underwater in Urquhart Bay.

Nevertheless, there is still a heartfelt wish among Nessie believers for the creature to be spied in its entirety once in a while, rather than offering nothing more than fleeting glimpses of humps and long necks, or tantalizing sonar traces of sizeable but anonymous bodies. In fact, such a wish has occasionally been granted, because there are a few detailed eyewitness reports on file that actually feature Nessie seen *out* of the water, moving around on land.

One of the earliest noteworthy instances occurred one afternoon in September 1919 on the shore of the marshland opposite Inchnacardoch Bay. A 15-year-old girl (the future Mrs Margaret Cameron) was playing on the bay's beach with her sister and two brothers when they heard a loud crackling noise coming from the marshland's trees, and then saw a huge beast emerge from among them. Pointing directly towards its amazed observers, it lurched down to the shore and into the water, humping its shoulders and twisting its small camel-like head from side to side upon a long neck. It seemed to be at least 20 ft long, with two short, round feet at the front of its body, a second pair further back, and a shiny grey skin.

One of the Academy of Applied Science's 'flipper' photos (computer-enhanced). (Academy of Applied Science/Dr Robert H. Rines, 1972)



Does this computer-enhanced underwater photo depict two *Nessies close together? (Academy of Applied Science/Dr Robert H. Rines, 1972)*

During the 1930s, another group of children claimed to have seen a monster, this time in Urquhart Bay's bushy swamp. When later shown pictures of animals in a book, the creature selected by them as being similar to the one that they had seen was the plesiosaur.

The 1930s also yielded the Spicer sighting, one of the most dramatic Nessie reports ever recorded. On 22 July 1933, between 3 and 4 pm, Mr and Mrs George Spicer – visitors from London with no prior knowledge of Nessie – were driving along the road linking Dores to Foyers when they were confronted with a most incredible sight. Emerging from the bushes about 200 yards further up the road, and raised several feet above its surface, was a horizontal object resembling an elephant's trunk. It quickly resolved itself into a neck when followed swiftly by a thick, grey-coloured body estimated to be about

5 ft high. Its feet, if it had any, were not visible to its two eyewitnesses because the lower portion of its body was hidden in the slope of the road. Something protruded from the area of its shoulder, which the Spicers later deemed to be the tip of its tail, curling forwards along the side of its body which was facing away from them.

Its body moved in a series of jerks and its neck arched upwards as it progressed rapidly across the road and into the bracken separating it from the lochside. Judging from the width of the road, the beast's total length was put at over 25 ft, but moments later it had vanished, leaving no trace in the water. The Spicers were repulsed by the beast's appearance: 'It was horrible – an abomination . . . a loathsome sight' – forceful descriptions that one would not expect if its species was in any way familiar. Mr Spicer also referred to it as the 'nearest approach to a dragon or prehistoric animal that I have ever seen in my life'.

William McCulloch, a cyclist to whom the Spicers spoke soon after their sighting, lost no time in pedalling back to the spot where the creature had emerged, and he was able to confirm that the bushes on both sides of the road and leading down to the loch were extensively flattened, as if a steamroller had been driven over them.

Another memorable land sighting occurred six and a half months later, and featured an exceptionally qualified eyewitness. At 1.30 am on the bright moonlit morning of 5 January 1934, 21-year-old veterinary student Arthur Grant was riding home on his motorbike, stone-cold sober and travelling from Inverness to Glen Urquhart, when he saw something dark move in the shadow of some bushes along the road's right-hand edge at the turn for Abriachan. What happened next is so startling that Grant's own account of it deserves to be quoted in full:

> I was almost on it when it turned what I thought was a small head on a long neck in my direction. The creature apparently took fright and made two great bounds across the road and then went faster down to the loch, which it entered with a huge splash. I jumped off my cycle and followed it but from the disturbance on the surface it had evidently made away before I reached the shore. I had a splendid view of the object. In fact, I almost struck it with my motorcycle. The body was very hefty. I distinctly saw two front flippers and there seemed to be two other flippers which were behind and which it used to spring from. The tail would be from 5 to 6 feet long and very powerful; the curious thing about it was that the end was rounded off – it did not come to a point. The total length of the animal would be 15 to 20 feet.

He gave further descriptive details at a meeting of Edinburgh's Veterinary Society:

> Knowing something of natural history I can say that I have never seen anything in my life like the animal I saw . . . It had a head rather like a snake or an eel, flat at the top, with a large oval eye, longish neck and somewhat longer tail. The body was much thicker towards the tail than was the front portion. In colour it was black or dark brown and had a skin rather like that of a whale. The head must have been about 6 ft from the ground as it crossed the road, the neck 3½ to 4 feet long and the tail 5 or 6 feet long. Height from belly to the back would be about 4½ feet and overall length 18 to 20 feet.

Sadly, Grant attracted much ridicule. However, a search made shortly afterwards, led by a Fellow of the Zoological Society of Scotland called H.F. Hay, discovered some large flipper-like tracks, measuring 24 in long and 38 in across, in the shingle some 70 yards further up the beach from where Grant had seen the beast go down the road's steep bank towards the loch. The team found some flipper tracks there too, spaced about 5 ft apart.

At 4.30 pm on 5 June 1934, a maid called Margaret Munro was looking out of the window of her employers' house overlooking Borlum Bay when she saw a very large beast about 300 yards away, turning back and forth mostly out of the water on the bay's shore. Watching it through binoculars for 25 minutes before it re-entered the water and swam away, she discerned a disproportionately small head perched upon the end of a giraffe-like neck, a huge dark-grey body with grey skin like an elephant but white underparts, and a pair of short front flippers. According to Munro, it was '. . . able to arch its back into large humps', but whether the back physically arched itself, or whether it bore protuberances that could be raised or lowered to yield humps, is uncertain from this description.

Another land sighting occurred on 28 February 1960, when Torquil MacLeod spied an immense animal half ashore on the beach at Horseshoe, about 2½ miles south of Invermoriston. With grey elephant-like skin and a long neck resembling an elephant's trunk, virtually throughout MacLeod's 9-minute-long, binocular-assisted sighting the creature faced directly away from him, but he spotted two paddle-like rear flippers – and once, as it turned around to re-enter the water, a front flipper also came briefly into view.

What makes this particular sighting so important is MacLeod's estimate of the beast's size – using the graticulations on his binoculars' lenses, he calculated that even without the tail, hidden in the water, the animal was 40–60 ft long! This is much bigger than anything reported by other eyewitnesses of terrestrial Nessies – twice as long, in fact. A plausible explanation of this anomaly, as put forward by Nicholas Witchell in his own coverage of these reports, is that perhaps it is the smaller, younger members of this species that come ashore more frequently, with the larger, fully mature members (like the MacLeod-observed specimen) spending most if not all of their time in the water.

After studying some of these accounts, even Nessie supporter-turned-sceptic Dr Maurice Burton was sufficiently impressed to suggest that it may actually be more rewarding to look for Nessie on land than in the water. Notwithstanding this, what remains unanswered is the question of *why* such a species should venture on to land in the first place.

Surely, creatures inhabiting a lake as amply supplied with fish and other edible livestock as Loch Ness scarcely need to seek prey out of the water. Reproduction would seem on first sight a more promising line of investigation – whether to lay eggs or to bear live young, many aquatic animals come ashore for this purpose. However, if Witchell's suggestion concerning the size of Nessie specimens generally reported on land is correct, then it would seem that these are juvenile individuals rather than adult, sexually mature ones.

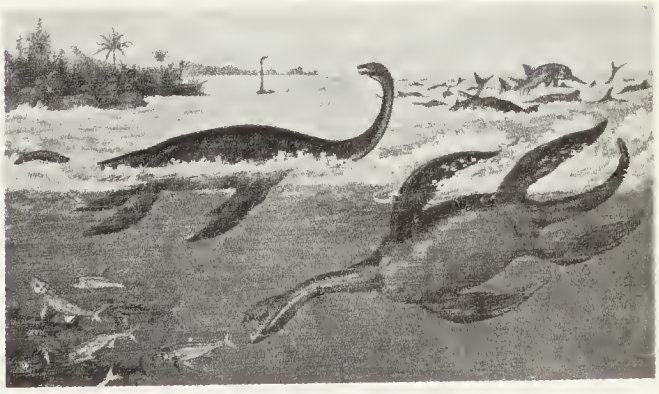
Yet even if the reason *why* such animals come ashore is still obscure, the apparent fact that they *can* move overland provides important support for eyewitness claims that similar animals inhabit a number of other Scottish lochs – including Morar, Shiel, Oich, Lochy, Quoich, and Arkaig. Perhaps this species actively migrates between lakes on a regular basis, or perhaps from one original inland home it has progressively invaded several others.

Ending this account of the Loch Ness monster is what may well be a unique underwater encounter between eyewitness and enigma. One day in 1880, diver Duncan MacDonald was lowered into Loch Ness at Johnnies Point, near the loch's Fort Augustus entrance to the Caledonian Canal, in order to examine a sunken ship there. Once beneath the water, however, his eyes soon beheld a sight that swiftly dispelled any thoughts of sunken ships – compelling him instead to signal his land-based colleagues to haul him back up straight away. The terrified, trembling figure that met their eyes when he re-emerged above the surface filled them all with great alarm, but it was several days before they were able to extract any details from him regarding the reason for his extreme fear.

Only then did they learn that while examining the ship's keel at a depth of about 30 ft, MacDonald had seen a creature at least as big as a goat lying upon a shelf of rock supporting the ship – a creature that in his opinion recalled a huge frog, staring directly at him and frightening him so severely that he refused to go into the loch ever again. And who can blame him? An underwater eyeball-to-eyeball confrontation with what could well be an exceedingly large carnivorous beast of uncertain identity and even more uncertain temperament would be a decidedly unnerving experience for anyone!

In praise of plesiosaurs

During the nineteenth century, when considering the morphology of plesiosaurs, an English palaeontologist called Dean Conybeare likened them to 'snakes threaded through the bodies of turtles'. This is an apt description, for whereas their deep, inflexible bodies and two pairs of paddle-shaped flippers are reminiscent of those belonging to the great marine turtles, their very long, slender necks and small heads are certainly rather ophidian in superficial appearance – exemplified by the elasmosaurs. In these, the last known group of plesiosaurs, which apparently died out alongside the dinosaurs at the close of the Cretaceous, the neck was disproportionately long. In *Elasmosaurus* itself, it measured 26 ft in comparison with the 20-ft length of the entire remainder of the animal, and contained 71 vertebrae.



Is a living species of plesiosaur the identity of long-neck water monsters?

Plesiosaurs fed upon fish and water-dwelling invertebrates, and again like turtles they were almost exclusively aquatic, coming on to land only to lay their

eggs. It is now believed that they swam like turtles too, moving their flippers up and down like great wings, so that they literally flew through the water (see p. 95).

In the light of this plesiosaurian precis, the above selection of cases readily demonstrates that people are seeing creatures that *look* like plesiosaurs – but *are* they plesiosaurs? There is no doubt that the external correspondence between plesiosaur and long-neck is much more convincing than most of the other cryptozoological identities on offer – giant eels, enormous worms or slug-like molluscs, specialized whales, or much-modified amphibians (this last-mentioned contender is rendered even less likely on account of the fact that hardly any marine amphibians are known, either living or prehistoric).

Nevertheless, there is a great deal more to consider than outward similarity when seeking to achieve a satisfactory zoological identification of a mystery beast. This concept was encapsulated by marine biologist Forrest G. Wood from the US Naval Ocean Systems Center, when commenting upon the nature of the object portrayed in Sandra Mansi's 'Champ' photo during a press conference held by the International Society of Cryptozoology on 22 October 1982 at the University of British Columbia:

> I will tentatively accept that it was a living animal. In appearance, it most closely resembles a member of the long-extinct group known as the plesiosaurs. That does not *make* it a plesiosaur. All I can say is that, in general appearance, it most closely resembles a plesiosaur, which was an aquatic reptile. I accept it was a living animal, but I can't say what kind.

Taking our lead from Shakespeare's 'All that glisters is not gold', we would do well to remember, therefore, that there is more to a plesiosaur than a periscope. So what else can the plesiosaur identity offer?

Some of the issues facing anyone attempting to champion the plesiosaur's cause as the long-neck can be effectively dealt with by considering the classic case of the modern-day coelacanth *Latimeria chalumnae*, whose discovery in 1938 sensationally resurrected an entire lineage of prehistoric lobe-finned fishes, the crossopterygians (p. 12).

Plesiosaurs and the missing post-Cretaceous fossils

As noted in the first chapter, a major obstacle to the likelihood of dinosaur persistence according to cryptozoological sceptics is the absence of verified post-Cretaceous dinosaur fossils. Surely, they argue, if dinosaurs had survived to the present day, we would have unearthed fossilized remains of them that bridge the gap between modern times and the close of the Cretaceous 64 million years ago. Precisely the same argument is levelled at the concept of living plesiosaurs. No one, however, has uncovered any post-Cretaceous fossils of coelacanths either – yet *Latimeria* is conclusive proof that its lineage has indeed survived. There are also many other modern-day animals with no fossil history linking them to prehistoric times, effectively discrediting this supposed objection to plesiosaur persistence.

Interestingly, in 1993 American palaeontologists Drs Spencer Lucas and Robert Reynolds disclosed that since 1980 two samples of elasmosaur fossils (one a single cervical vertebra, the other a collection of about 40 incomplete cervical vertebrae) have been collected in California's Cajon Pass from a rock unit that may pertain to the San Francisquito Formation; some invertebrate fossils from this formation indicate a Palaeocene age. No direct association of known Palaeocene fossils and the plesiosaur remains, however, could be demonstrated. Hence Lucas and Reynolds decided to follow the more conservative option, and class the plesiosaur material as dating from the late Cretaceous.

A question of habitat

Whereas fossil coelacanths were freshwater species, the modern-day *Latimeria*'s physiology is modified for a marine existence. Its evolutionary adaptation for survival in a profoundly different habitat from that of its ancient predecessors is of great relevance to the question of modern-day plesiosaur survival, because one of the arguments frequently raised by sceptics is that, as the plesiosaur species currently known from fossils were all marine, freshwater long-necks could not be plesiosaurs. Taking this line of thought even further: as the freshwater long-necks so greatly resemble marine long-necks that it seems reasonable to assume that they all belong to the same major taxonomic group of animals, if these freshwater versions are not plesiosaurs then surely their marine look-alikes cannot be either.

As pointed out by Professor Roy Mackal in his book *The Monsters of Loch Ness* (1976), however, some fossil plesiosaurs have been discovered under conditions that imply a freshwater environment, especially rivers and estuaries – and, as he also notes, we can speculate that while pursuing fish, or escaping predators of an inflexibly marine nature, these reptiles travelled up rivers and perhaps into lakes. Propelling this hypothesis to its logical conclusion, it is not

unreasonable to imagine a situation whereby, finding ample food in large bodies of freshwater and freed from the problems of predation, some plesiosaurs might have gradually transformed into resident freshwater creatures – a scenario already recorded for such noteworthy forms as the seals of Lake Baikal and the sharks of Lake Nicaragua.

As the crocodilians never succeeded in invading many of the more temperate bodies of freshwater around the world, any vacant niche for a large reptilian predator in such habitats would be readily filled by plesiosaurs. And the seas are so unutterably vast that there would be more than sufficient space for a wide variety of aquatic mammals and reptiles to coexist without competing excessively with one another.

Furry endothermic plesiosaurs and giant giraffe-necked seals

Another purported problem to be faced when seeking to reconcile long-necks with plesiosaurs is that, according to various eyewitness descriptions, the former sometimes possess features not exhibited by any of the fossil plesiosaurs on record. These include whiskers and other furry accoutrements, horns or snorkel-like projections, one or more dorsal humps, an absence of any discernible tail, and an unexpectedly flexible neck.

In his book *In the Wake of the Sea-Serpents* (1968), cryptozoologist Dr Bernard Heuvelmans cited these discrepancies with traditionally conceived plesiosaur morphology as good reasons for jettisoning the plesiosaur identity in favour of a novel mammalian contender – an undiscovered species of giant giraffe-necked seal, which he christened *Megalotaria longicollis*. He proposed that it occupies the ecological niche left vacant by the plesiosaurs' extinction, and thus, through convergent evolution, had acquired certain of their characteristics, most notably a lengthy neck. Peter Costello subsequently adopted this same identity for freshwater long-necks, within his book *In Search of Lake Monsters* (1974).

Although such a beast could be responsible for certain long-neck sightings, from the cases documented above and from the discussion that follows, however, it will become apparent that this identity cannot satisfactorily explain many others, especially those, for instance, in which a very distinct (and sometimes relatively long) tail is spied – not a pinniped feature.

In any case, in my view it is unnecessary to invent an entirely new animal (i.e. one that has no palaeontological predecessors of any kind) to explain long-necked water monsters when there are perfectly reasonable explanations for the morphological differences between such creatures and fossil plesiosaurs.

For instance, the 'hair' and 'whiskers' allegedly exhibited by some long-necks may not be true hair at all. It could comprise sensory filaments, composed of soft tissue that would not leave any impressions in fossilized specimens. Equally, the horns or snorkels might be protrusile breathing tubes. As for the dorsal humps: these could not be vertical undulations of the animals' bodies – unlike mammals, most reptiles cannot perform such movements (but see the thalattosuchians, p. 116), and the framework of the plesiosaurian body was in any case extremely rigid. More reasonable are the popular suggestions that they are expanses of fatty tissue, inflatable airsacs, or even exposed portions of a dorsal crest (like that of the Lake Khaiyr monster) – and, as with sensory bristles, it is unlikely that the outlines of breathing tubes, rolls of fat, airsacs, or membranous dorsal crests would be preserved in fossils. (A series of airsacs lying across a plesiosaur's back might even explain the strange 'annulations' of the *Fly* sea serpent described on p. 79.) There is, however, another, much more important possibility – that these structures are, in evolutionary terms, a recent innovation.

All of what we know regarding plesiosaurs is based upon fossils that are at least 64 million years old, and perhaps those species were indeed unfurred. If, however, any plesiosaurs have survived to the present day, 64 million years of intervening evolution are likely to have yielded animals markedly different from their Cretaceous ancestors – animals that may, for instance, have developed fur, and/or snorkels (see p. 98), airsacs, and crests.

Once again, the coelacanths provide a notable precedent for post-Cretaceous evolutionary change. The living *Latimeria* is five times larger than any of its long-deceased fossil relatives, and, as noted earlier, is modified for a marine (rather than a freshwater) existence.

During the 1970s, a revolution occurred in dinosaur research, sparked by a dramatic theory promulgated by Dr Robert Bakker and given widespread public airing in Adrian Desmond's best-seller *The Hot-Blooded Dinosaurs* (1975). Namely, that at least some of the dinosaurs, hitherto looked upon as sluggish cold-blooded (ectothermic) creatures, might well have been active warm-blooded (endothermic) animals, just like mammals and birds.

Moreover, following the remarkable discovery of a furry species of fossil pterodactyl, *Sordes pilosus*, it became increasingly likely that a physiology based upon warm-bloodedness (explaining the presence of

fur) had evolved independently in wholly unrelated groups of vertebrates. Since then, some researchers have even proposed that certain dinosaurs and cynodonts (mammal-like reptiles) could have been hairy.

It is not impossible, therefore, that post-Cretaceous plesiosaurs (and perhaps even earlier ones) also evolved both of these traits, ultimately yielding endothermic furry species. In order to meet the high energy requirements for maintaining an endothermic metabolism, however, their habitat would need to contain an abundance of suitable food. Whereas this would not be a problem for marine plesiosaurs inhabiting the vast seas, freshwater versions might face problems if confined to relatively small, land-locked lakes, unless they were capable of travelling overland from one stretch of freshwater to another. For plesiosaurs frequenting giant biota-rich lakes like Champlain and Loch Ness, on the other hand, a small population could probably sustain itself without obligatory recourse to terrestrial migration.

There is, however, an alternative scenario to consider – one that offers the benefits of endothermy without involving its endergonic burdens. One popular reason among cryptozoological sceptics for discounting the prospect of plesiosaur survival is that creatures resembling them have been reported in areas that are too cold to permit ectothermic reptiles to survive. Yet even if plesiosaurs never did acquire an endothermic metabolism, they could still exist in such localities – thanks to a physiological anomaly known as gigantothermy.

Ectothermic creatures weighing 2200 lb or more lose body heat so slowly that to all intent and purposes they are functional endotherms, and are thus termed gigantotherms. One of the most studied marine vertebrates living today that exhibits a gigantothermic physiology is the leathery turtle *Dermochelys coriacea*, which, with a maximum total length of around 9 ft, is far smaller than any potential plesiosaur responsible for the long-necks. Of course, young leathery turtles are too tiny to be gigantothermic, but as they are born and mature in tropical zones this is not a problem. Only as an adult does this species migrate into colder, northern waters, and once again the same could be true of plesiosaurs – though as they would exceed the minimum size threshhold at a younger age than the leathery turtle they could begin their northerly migrations earlier. In short, the physiological mechanism of gigantothermy would satisfactorily facilitate the presence of adult plesiosaurs in low-temperature zones normally unfavourable to reptiles.

Gigantothermy would not, however, be sufficient for plesiosaurs that were permanently resident in colder, northern waters, such as Loch Ness or the Arctic seas, because this mechanism could not be utilized by young, small individuals. There is, on the other hand, a way of keeping warm in such circumstances that once again does not involve the increase of metabolic activity required by true endothermy, and which could have been developed by boreal plesiosaurs. Earless seals (i.e. not sealions or fur seals) swimming in Arctic or Antarctic waters contract the tiny blood vessels (arterioles) in their skin, which enables the skin to cool down to a temperature only marginally above that of the surrounding water. This prevents heat from leaving their bodies, so that, whereas their skin is cold, the interior of their bodies remains warm – effectively insulated from the low environmental temperature but without necessitating any metabolic rise in order to achieve this.

Alternatively, the possibility that northern-based plesiosaurs would evolve true endothermy cannot be excluded; if so, their youngsters, like those of seals, would likely be well supplied with insulating layers of fat and be profusely furred – at least until their body size rose above the lower threshold for gigantothermy to begin. Although this is of course all speculation, it offers up one very intriguing concept for consideration.

Sightings of otters are regularly reported from Loch Ness, and these lithe furry beasts have often been put forward as an identity for the Ness monsters, despite the fact that, if eyewitness reports and sonar traces are accurate, the Ness monsters are very much larger than any form of otter. Perhaps in reality the exact reverse of this scenario is the truth – wouldn't it be ironic if some otter sightings actually featured juvenile hairy plesiosaurs?

The tale of a plesiosaur's tail

In their respective books on sea serpents and lake monsters, Heuvelmans and Costello claimed that long-necks appear to lack tails, and that in sightings that seemingly featured tailed long-necks the eyewitnesses had mistaken the paired rear flippers of such creatures for tails. As can be seen from various of the cases documented earlier in this chapter, however, long-necks with two pairs of flippers *plus* a well-delineated tail have been clearly observed on a number of occasions in the sea and in lakes – which thereby points more towards a plesiosaur than towards a pinniped in the identity stakes.

The most likely explanation why many long-neck eyewitnesses do not report seeing a tail is quite

simply that the tail is not rendered visible when swimming. In whales and other cetaceans, fishes, and the extinct ichthyosaurs and mosasaurs, the tail is the principal locomotory organ, which would explain why it is or would have been readily apparent to observers of such creatures. In the case of the plesiosaurs, however, the tail's function as a rudder would not offer any reason for it to emerge above the surface. Only during those rare occasions necessitating a plesiosaur to come ashore – to lay eggs or (if a freshwater species) to move from one lake to another one close by – would the tail acquire an additional role, assisting the neck in preventing the terrestrially inept creature from overbalancing. (Traditionally, it was believed that plesiosaurs lacked a sternum or breast-bone – which would have made forays on to land very difficult – but in 1991 zoologists Drs Elizabeth Nicholls and Anthony Russell presented new evidence to challenge this assumption.)

In any case, even if the tail did become visible during swimming it might not be recognized for what it was. Heuvelmans noted that in certain cases featuring sea serpents of types other than the long-necks, tails of enormous lengths are described – which led him to suggest that these tails might actually have been trails of bubbles. If true, I see no reason why the reverse explanation could not apply in cases featuring allegedly tailless long-necks – that eyewitnesses have wrongly identified a relatively nondescript, inactive tail as a bubble trail generated by the swimming animal.

The concept of evolved plesiosaurs can also offer a clue in this tale of the long-neck's tail (or lack of it). In the elasmosaurs, the last plesiosaurs known from the fossil record, the tail was extremely short and, since propulsion was accomplished exclusively by the flippers, its function was limited to that of a relatively dispensable rudder. Thus it would not be surprising to find a further 64 million years of evolution dispensing entirely with this appendage, yielding tailless plesiosaurs. Consequently, even if some long-necks really are tailless, this still does not eliminate a plesiosaur identity from contention.

Plesiosaur flippers and plesiosaur flight (underwater!)

When our knowledge of a creature is based solely upon fossilized remains, our perceptions of its appearance, movements, behaviour, and general lifestyle can change quite drastically as new fossil discoveries are made and research upon them is carried out.

It was traditionally assumed, for instance, that plesiosaurs swam using their flippers as oars, moving them backwards and forwards in a horizontal plane, with the action of drag upon them providing the propulsive thrust. However, from studies of the shape of their pectoral and pelvic girdles, and the presence of excellent areas for muscle attachment on the ventral portion of these girdles enabling these animals' flippers to achieve powerful downstrokes, researchers now believe that plesiosaurs swam by underwater flying. That is to say, they moved their flippers up and down like penguins, sea lions, and marine turtles, with propulsive thrust being provided not by drag but by lift. This belief is also supported by the pointed tips of plesiosaur flippers – flippers used as oars gain no advantage from being pointed, but they do if they are being used as wings.

Skeletal structure of a plesiosaur flipper. (Loren Coleman/Fortean Picture Library)

This fundamental change of opinion is of relevance to the question of whether long-necks are indeed living plesiosaurs, because underwater flying yields a much greater wake than rowing, and many long-neck eyewitnesses have remarked upon the great displacement of water occurring as the creature swam by. Once again, this would argue against a seal identity as these swim by rowing rather than flying. Furthermore, there is also an item of evidence regarding long-neck locomotion that would appear to eliminate sealions – an important matter, bearing in mind that, unlike seals, these creature do swim by underwater flying. Namely, the remarkable 'flipper' photos obtained at Loch Ness in August 1972 by Dr Robert Rines's scientific team, because when closely scrutinized they reveal a number of key clues regarding the taxonomic identity of the animal in question.

During his analysis of these photos for Witchell's book *The Loch Ness Story* (1989), veteran Nessie researcher Dr Denys Tucker, formerly of the Natural History Museum's Ichthyology Department, pointed out the presence of what seem to be two ribs visible

beneath the skin of the animal's flank, just in front of the base of the flipper (which, as noted earlier, is a hind flipper). Their position indicates that these are dorsal ribs, but whereas those of mammals do not extend as far back as the hind limbs, they do in plesiosaurs and other reptiles, implying a reptilian identity for the flipper's owner.

The second 'flipper' photo (computer-enhanced) of the Academy of Applied Science. (Academy of Applied Science/Dr Robert H. Rines, 1972)

As for the flipper itself, it is ideally structured for underwater flying – relatively broad, flattened, pointed at its tip, and thin, but also rigid, thereby presenting a large, inflexible area of resistance to the water when held face-on during the propulsive down-stroke, and enhanced by a novel non-skeletal flap at the trailing edge (yielding this flipper's distinctive diamond shape) to prevent turbulence. And during the passive upstroke, this flipper would provide first-class lateral stability, by functioning as a hydrofoil.

The presence of the long ridge-like structure running down the central axis of the flipper has been highlighted by opponents of the plesiosaur identity, who note that no such skeletal component has ever been recorded from the flippers of fossil plesiosaurs. Indeed, the only known animal of any type whose flippers display a similar structure is the Australian lungfish *Neoceratodus*. In reality, however, there is no proof that this mystifying ridge *is* a skeletal component. On the contrary, it is far more likely to be a wholly external keel, a refinement for increasing the streamlining of the flipper by enhancing water flow across it.

All in all, the enigmatic Nessie flipper is precisely what one might expect from the limb of an aquatic reptile of evolved plesiosaurian persuasion.

Why the plesiosaur identity wins by a neck

Views regarding flipper locomotion are not the only ones with cryptozoological pertinence to have changed over the years in relation to plesiosaur biomechanics. When the first plesiosaur remains were excavated and studied in Victorian times, scientific reconstructions of the living animals depicted them swimming at the surface of the ocean with gracefully curving necks held vertically erect, like surrealistic reptilian swans.

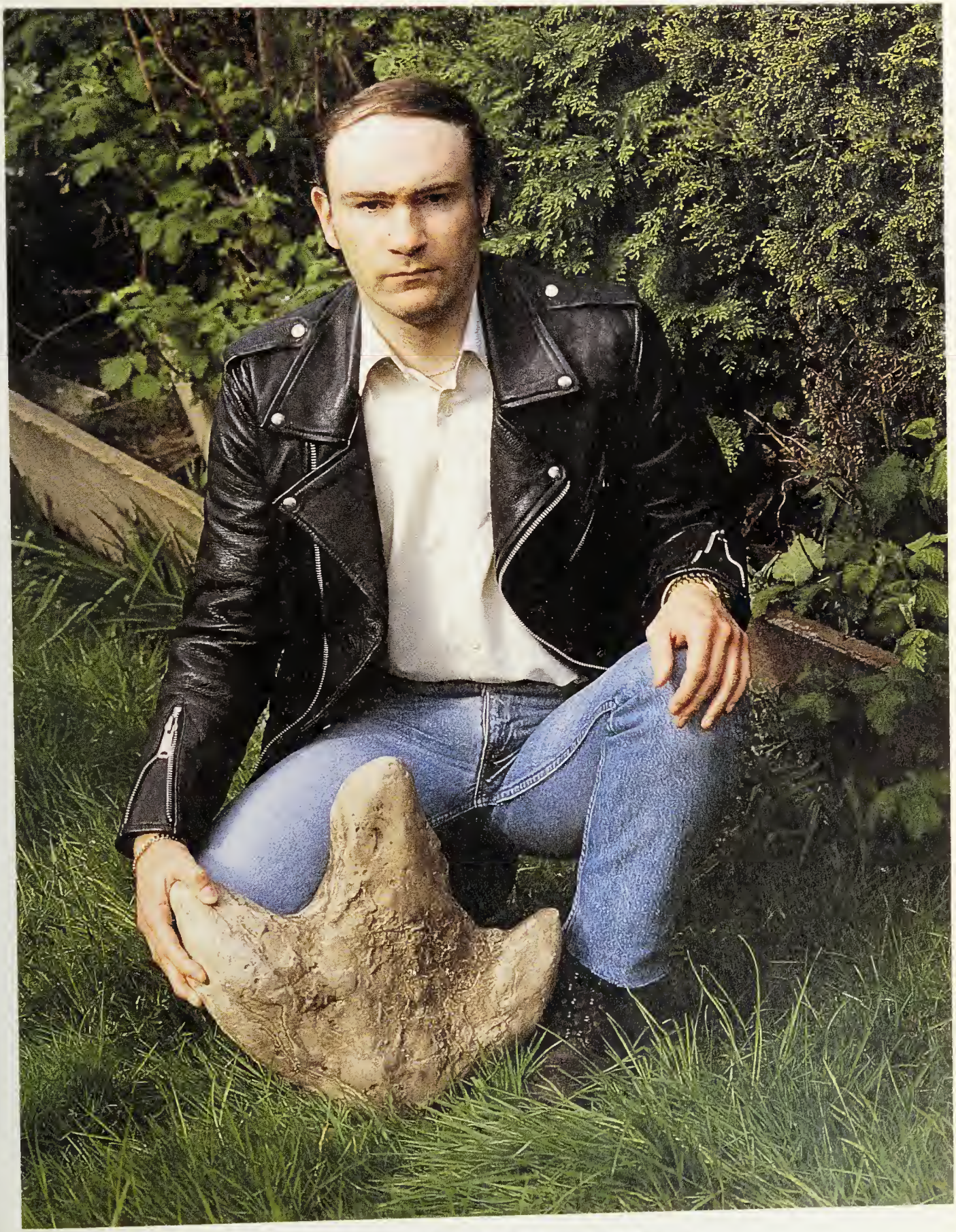
Later, however, that image was replaced by one which portrayed plesiosaurs with quite inflexible necks that could not be raised or even curved to any great degree – a viewpoint succinctly expressed in 1914 by Chicago University researcher Professor Samuel Williston:

> Textbook illustrations of the plesiosaurs usually depict the necks, like those of the swans, freely curved . . . But the plesiosaurs did not and could not use the neck in such a way. They swam with the neck and head, however long, directed in front, and freedom of movement was restricted almost wholly to the anterior part. The posterior part of the neck was thick and heavy, and could not have been moved upward or downward to any considerable extent and not very much laterally. From all of which it seems evident that the plesiosaurs caught their prey by downward and lateral motions of their neck.

This state of affairs persisted for many years, and for cryptozoology the inevitable outcome was that plesiosaurs could no longer be looked upon as serious contenders for the long-neck identity – because they were deemed incapable of swimming with their head and neck held high above the surface of sea or lake in the distinctive manner characterizing this particular category of water monster. That in turn enhanced the credibility of the plesiosaur's greatest challenger in the identity stakes, the hypothetical 'giraffe seal' *Megalotaria*, for pinnipeds can certainly raise their head and neck up above the water surface.

Nowadays, however, events have come full circle. Based upon fresh studies and specimens, palaeontologists believe that plesiosaur necks were considerably flexible after all. For example, according to an authoritative encyclopedia of prehistoric life from 1988, with Professors Brian Gardiner, Barry Cox, Robert Savage, and Dr Colin Harrison as consultants:

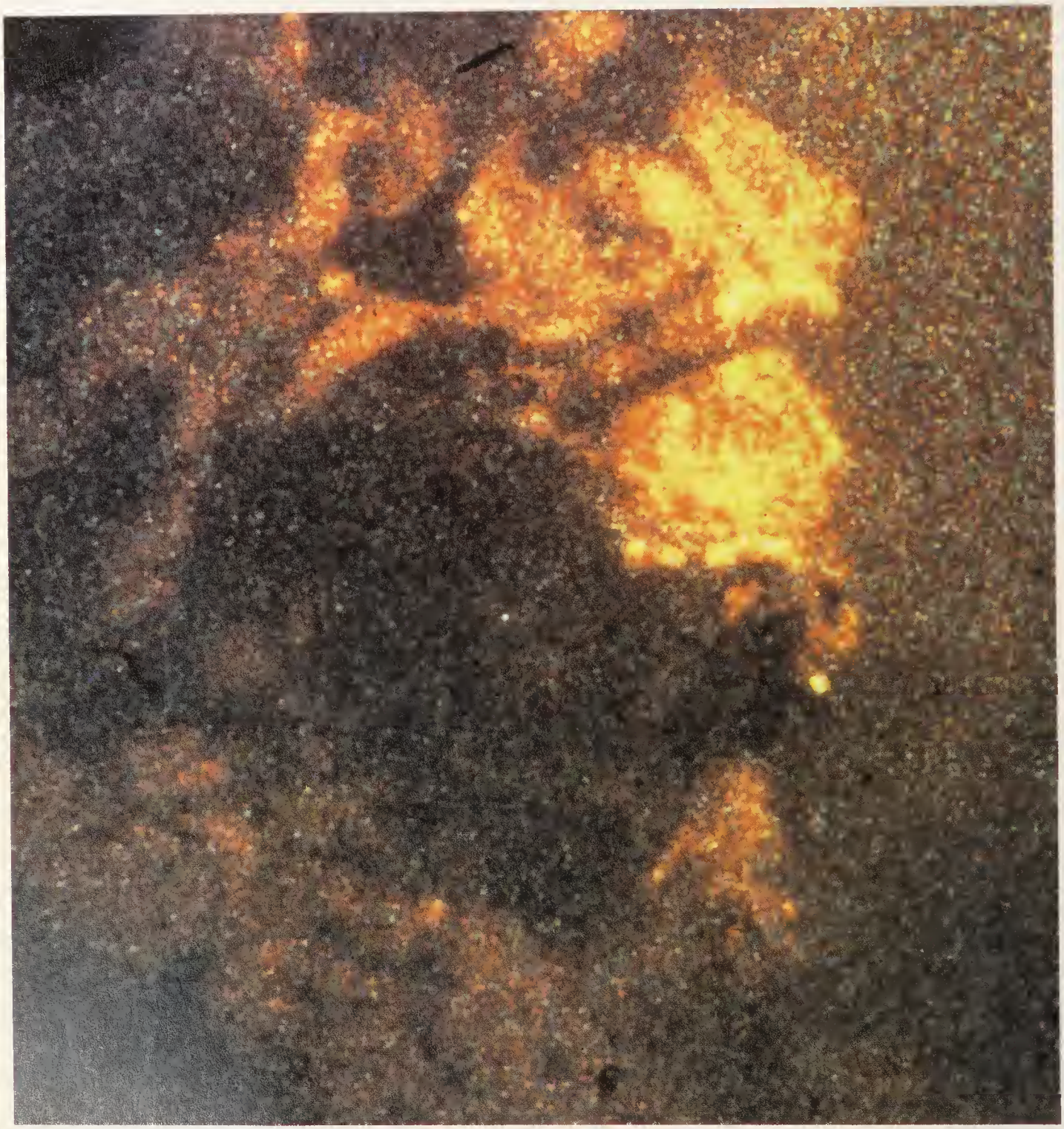
> The plesiosaurioids [i.e. the true, non-pliosaurian plesiosaurs] fed on modest-sized fishes and squid. Their long necks enabled them to raise their head high above the surface of the sea and scan the waves in search of traces of their prey.



The author and the cast of a three-toed dinosaur print resembling that of the mokele-mbembe. *(Dr Karl P.N. Shuker)*

The sirrush, *depicted upon the magnificent Ishtar Gate of ancient Babylon. (Vorderasiatisches Museum, Berlin)*

Opposite: Life-sized reconstruction of Phorusrhacus, *an extinct South American terror bird – is the mysterious* makalala *a modern-day relative? (Dr Karl P.N. Shuker/reproduction courtesy of Drayton Manor Park & Zoo)*



The enigmatic 'gargoyle' photo (computer-enhanced) – the horned head of Nessie? (Academy of Applied Science/Dr Robert H. Rines, 1975)

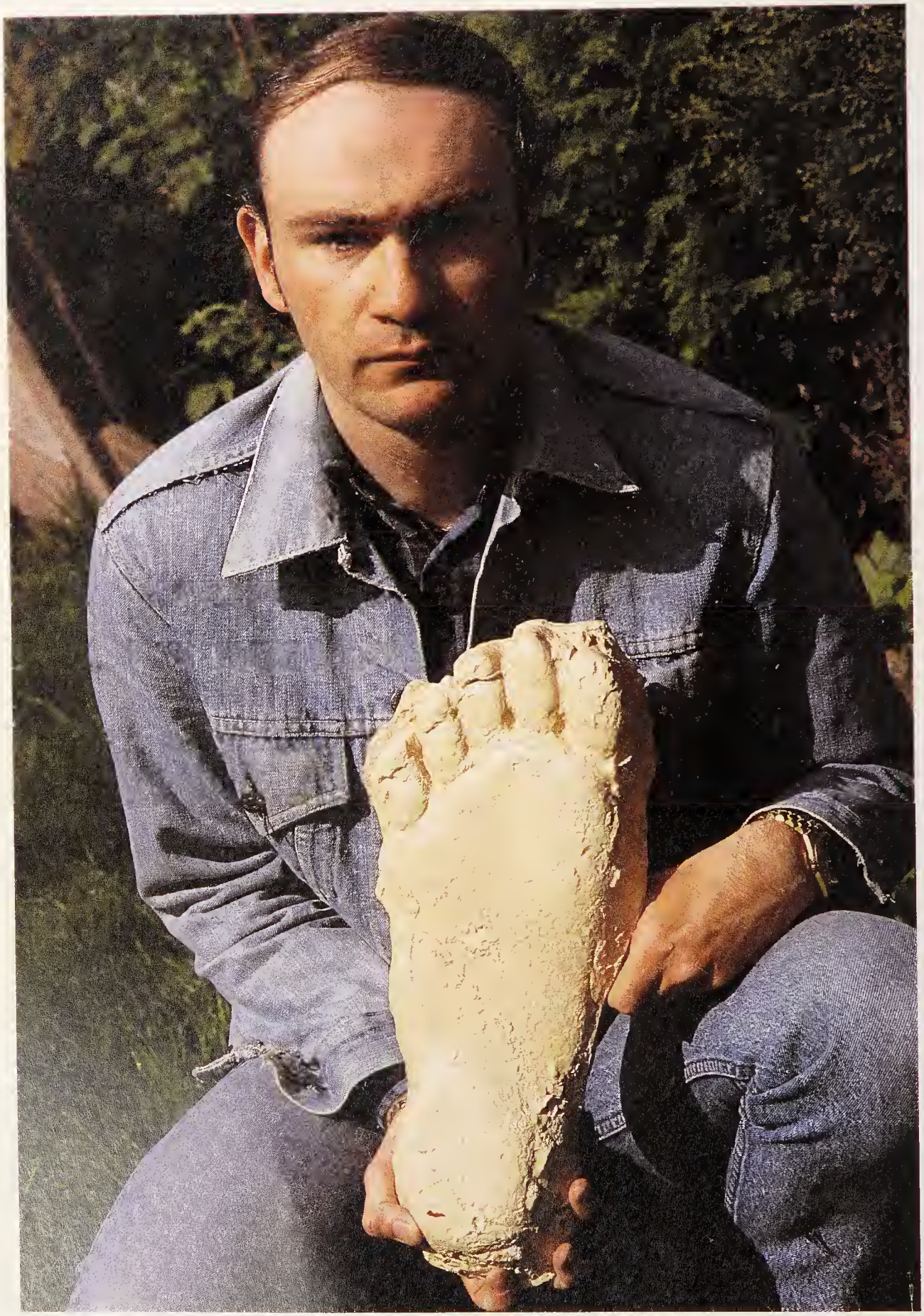
Opposite: The Hook Island sea serpent from 1964 – a living placoderm? (Robert le Serrec/Fortean Picture Library)

Life-sized reconstruction of Styracosaurus*: an ancestor of the* emela-ntouka*? (Dr Karl P.N. Shuker/reproduction courtesy of Drayton Manor Park & Zoo)*

Left: A tooth from the officially extinct megalodon shark. (Dr Karl P.N. Shuker)

Opposite: The author with skull of Smilodon *– still alive and well in South America? (John Potter/News Team International Limited)*

MYSTERY
CATS
OF THE WORLD



The author with the cast of a footprint made by a bigfoot – a surviving Gigantopithecus?
(Dr Karl P.N. Shuker)

Similarly, in the words of biophysicist Professor R. McNeill Alexander, writing in 1989:

> If plesiosaurs had eaten worms or clams, we might suppose that they used their necks to reach down to the bottom, dabbling like ducks or swans, but their spiky teeth seem more suitable for catching fishes and squid-like animals which would probably have been too active to be caught easily that way. It seems likely that they darted at prey, extending their long necks to catch things as they swam by. The movement could have been fast, if the neck was held out of water. Herons use their long necks to dart at fish, though they stand in the water instead of floating as plesiosaurs presumably did.

In Bristol University palaeontologist Dr Michael Benton's *The Reign of the Reptiles* (1990):

> Elasmosaurs of the Cretaceous . . . took the long-necked adaptations to an extreme. Some had as many as 70 cervical vertebrae, and the neck could bend around upon itself two or three times. The elasmosaurs no doubt jabbed their snake-like necks rapidly among the scattering schools of teleost fishes. They could have darted the head in and out and seized several fish without moving the body at all.

The inescapable conclusion is that any neck capable of such feats as those described above is more than capable of achieving anything so far described by long-neck eyewitnesses.

Moreover, as pointed out once again by Alexander in relation to plesiosaurs:

> If they swam under water with the long neck stretched out in front it would have been quite tricky for them to steer a straight course: if the animal accidentally veered slightly to one side, the water, striking the neck obliquely, would tend to make it veer more . . . It seems possible that plesiosaurs often avoided this problem by swimming at the surface with their necks out of the water.

Clearly, then, there is a sound biomechanical reason for plesiosaurs to be able to raise their lengthy necks above the water surface. However, long-necks certainly do not spend all of their time with their necks out of the water – otherwise they would have been seen much more often – so most of their swimming must occur while completely submerged. Yet in view of Alexander's remarks, surely such behaviour conflicts with a plesiosaur identity?

Not necessarily. Bearing in mind that even when long-necks 'up-periscope' through the water their necks are nowhere near as long as those of elasmosaurs and other overtly long-necked plesiosaurs, the simple solution would seem to be as follows: if plesiosaurs have indeed survived incognito into the present, during their presumed 64 million years of post-Cretaceous evolution their necks have become shorter (at least by plesiosaur standards).

Biomechanically, a shorter neck would be much less of a hindrance to swimming while wholly submerged – thereby reducing any necessity for a plesiosaur to spend most of its time with its neck held out of the water. This in turn would enable plesiosaurs to propel themselves faster than those ancestors currently known from the fossil record, whose long necks – either when held out of the water, or when submerged under it – would have greatly impeded rapid swimming. The fact that some long-necks are said to be very fast swimmers has, until now, posed something of a problem for proponents of the plesiosaur identity, but it can be seen that an evolved plesiosaur with a moderately but not dramatically long neck could well be capable of a very respectable turn of speed, even with its neck submerged.

Monstrous behaviour

Perhaps the classic sceptical response to the question of whether plesiosaurs have survived into modern times is the statement, 'If they had survived, science would have discovered them long ago.' The informed cryptozoologist will soon point out, however, that this assumption is simply not warranted. As has already been stated on many occasions, the coelacanth *Latimeria* provides a notable precedent in favour of plesiosaur persistence – by remaining unknown to science until 1938. Indeed, as I revealed in my book *The Lost Ark. New and Rediscovered Animals of the 20th Century* (1993), this is only one of many spectacular species of aquatic animal to have been discovered and described by science since 1900.

Among these are seven new species of beaked whale (the latest was described in 1991), a creamy-white river dolphin from China called the baiji (1916), the pa beuk (world's largest freshwater bony fish; 1930), the huge and monstrously grotesque megamouth shark (1976), a bizarre sea-bottom worm called *Riftia* that inhabits 8-ft-tall tubes and flourishes huge scarlet tentacles (1977) and a gigantic freshwater species of Thailand stingray that may exceed 15 ft in length (1988). If all of these can evade scientific detection for so long, how can anyone claim with certainty that there are no reclusive plesiosaurs in existence?

If such beasts really do exist, however, there must

be reasons why they are so elusive – which an examination of long-neck behaviour as reported by eyewitnesses may help to uncover.

One of the principal arguments put forward by sceptics of the giraffe-necked seal identity is that if long-necks really were pinnipeds, then surely they would be seen far more frequently than is currently the case – as these mammals are exceedingly inquisitive and therefore very likely to make their presence readily apparent to anyone on or near the loch, and also spend quite an amount of time ashore during the breeding season.

Aquatic reptiles, on the other hand, like crocodiles and water snakes, rarely show such interest in the presence of humans, and there is no reason to suspect that plesiosaurs would be any more inclined to do so. Moreover, if, as has been suggested, some plesiosaurs had become viviparous (bearing their young live), they need not even come ashore for reproduction.

Breathing air while staying unobserved would not pose any great problem for plesiosaurs either – irrespective of which out of the two current theories concerning the mechanics of plesiosaur respiration is the correct one. Their nostrils' external openings are positioned very high on their heads (just in front of their eyes, in fact) rather than at the snout's tip. According to the traditional view, therefore, these beasts could lie directly beneath the water surface with only the tips of their nostrils protruding through it (and perhaps equipped with flaps or extrusible snorkels – the 'horns' noted by eyewitnesses?), thereby obtaining all the oxygen that they require while remaining undetected by all but the keenest-eyed observers.

In 1991, however, after studying a superb 200-million-year-old fossil skeleton of a 15-ft-long plesiosaur called *Rhomaleosaurus megacephalus*, Drs Arthur Cruickshank, Philip Small, and Mike Taylor revealed that it had possessed furrows that ran from the end of its snout and along its palate into each of its two internal nostril openings – which were positioned much further forward than those of such familiar aquatic animals as whales and crocodiles. This suggested that as the creature swam, water passing into the plesiosaur's mouth would travel along these furrows, into the nostrils' internal openings and out of them via their external openings. Consequently, the researchers speculated that these aquatic reptiles didn't use their nostrils for breathing, but rather for underwater sniffing – assisting them in their search for carrion and live prey.

How, therefore, did they breathe? Cruickshank, Small, and Taylor suggested that they accomplished this through their mouth – hence they would periodically come to the surface to gulp air. And sure enough, there are several eyewitness accounts of 'head-and-neck' sightings featuring Nessie and other long-necks in which the eyewitness has spied the creature making gulping sounds or movements, which would be entirely consistent with respiratory behaviour of this nature. Moreover, if these beasts chose merely to extrude the tips of their jaws to just above the surface, they could take in oxygen without being seen.

Plesiosaur behaviour also explains another initial anomaly of long-neck elusiveness; why are there no bona fide long-neck carcasses on file? Today's advanced cetaceans are often stranded because of malfunctioning sonar and their inability to raise their necks out of the water in order to restore their sense of direction visually – whereas plesiosaurs, lacking sonar and, in any case, well-equipped with a flexible neck, would not suffer such problems.

There is, however, another facet of plesiosaur behaviour that is also of great pertinence to this issue. Like certain modern-day marine vertebrates such as penguins and sealions, but unlike cetaceans, seals, ichthyosaurs, and mosasaurs, plesiosaurs habitually swallowed large stones. For many years, zoologists were unable to suggest a reason for this behavioural dichotomy. The traditional explanation for stone swallowing was that they were utilized in grinding up food to facilitate digestion, but this is unsatisfactory, because, collectively, the members of one group ate much the same range of foods as those of the other group. Once again, it was Dr Michael Taylor, this time in 1993, who offered an alternative insight.

Taylor noticed that, whereas the non-swallowers of stones all utilized their tail as the major organ of propulsion (the tailless seals use their hind flippers in an analagous fashion) and were fast swimmers, the swallowers relied principally on their limbs, achieving a type of relatively leisurely 'underwater flight'. From this, he proposed that the swallowers were ingesting (and, if no longer required, regurgitating) stones for ballast purposes – which would counteract the tendency of such creatures to rise upwards through the water while swimming slowly or remaining stationary (the much faster speeds attained by non-swallowers when hunting would prevent this from happening to them). It would also mean that a carcass containing a number of these stones is more likely to sink down to the depths than to be washed ashore – so if long-necks are indeed plesiosaurs, the missing evidence of stranded plesiosaur remains is no longer a mystery.

Although there do not appear to be any genuine long-neck carcasses on file, there are certainly many records of *supposed* long-neck carcasses, some decidedly plesiosaurian in appearance, but those that were formally investigated revealed a very different identity – a rotting shark. On 25 April 1977, for example, the corpse of a huge plesiosaur-like beast was caught in the nets of the Japanese fishing vessel *Zuiyo Maru*, trawling in waters about 30 miles east of Christchurch, New Zealand. About one month dead, the carcass measured roughly 33 ft long, and was in an extremely advanced state of decomposition, smelling so badly that the crew very speedily cast it overboard – but not before its measurements were recorded, a few fibres were taken from it, and some photos were obtained.

Carcass of the sea monster hauled up off New Zealand by a Japanese fishing vessel. (Taiyo Fisheries, Tokyo/Fortean Picture Library)

Biologists were very perplexed by the photos, and many identities were offered, including a giant sea-lion, a huge marine turtle, a whale, and a modern-day plesiosaur. For quite a time, its true identity remained undisclosed, until the fibres from it were meticulously analysed by Tokyo University biochemist Dr Shigeru Kimora. He discovered that they contained a very special type of protein, called elastodin, which is found only in sharks – not for the first time, the scientific world had been fooled by a deceptively shaped decomposing shark carcass. Indeed, this phenomenon is so well known nowadays that crypto-zoological writer Daniel Cohen has even coined an apt term for such a carcass – a pseudoplesiosaur.

Pseudoplesiosaurs generally turn out to be the decaying carcasses of the basking shark *Cetorhinus maximus*, but as it looks nothing like a plesiosaur when alive, how do its dead remains acquire this appearance? In fact, the striking metamorphosis is easily explained.

When the carcass begins to decompose, the gill apparatus falls away, taking with it the shark's jaws, and leaving behind only its small cranium and its exposed backbone, which resemble a small head and long neck. The triangular dorsal fin also rots away, but sometimes leaves behind the rays, which can look a little like a mane – especially when the fish's skin also decays, allowing the underlying muscle fibres and connective tissue to break up into hair-like growth. Additionally, the end of the backbone only runs into the top fluke of the tail, which means that during decomposition the lower tail fluke falls off, leaving behind what looks like a long slender tail. The plesiosaur image is completed by the shark's fins, for the pectoral and sometimes the pelvic fins remain attached, yielding the plesiosaur's flippers.

Sometimes, however, the fins become distorted, so that they can (albeit with a little imagination!) look like legs with feet and toes, and male sharks have a pair of limb-like copulatory organs called claspers, which would yield a third pair of 'legs' – an extraordinary transformation from a dead basking shark to a hairy six-legged long-neck that explains the remarkable hexapedal Stronsay beast. A decidedly strange, giraffe-necked carcass, it was washed ashore in the Orkneys during October 1808, but its identity as a shark was confirmed by studying some of its preserved vertebrae, still held at the Royal Museum of Scotland.

Finally, another likely reason why long-necks are not encountered as often as one might expect is that they dislike the sounds emitted by the various mechanical contrivances in which mankind puts to sea or traverses the larger inland waters of the world; hence they actively avoid them. Nessie, for instance, has apparently reacted instantly on several separate occasions to the sound of a motorboat engine, and in a number of cases the sounds of seagoing vessels seem to have generated sightings of rapidly-departing marine long-necks.

Cryptozoology and the clothing industry might seem at first to have little in common, but both are subject to the whims and dictates of fashion. After attaining great popularity during the Victorian era, the plesiosaur identity for the long-necks became distinctly unfashionable once the hypothetical 'giraffe seal' *Megalotaria* presented its credentials during the 1960s – but in the best traditions of fashion, events have since turned full circle. The modern discoveries and ideas concerning plesiosaur anatomy and physiology discussed here have swept aside the objections to a

reptilian identity for long-necks that had earlier advanced the *Megalotaria* cause, so that today the plesiosaurs' candidature is once again the most compelling and comprehensive on offer.

Yet if there are readers who still consider a pinniped to be a more plausible long-neck than any plesiosaur, they would do well to recollect the Spicers' description of Nessie: 'It was horrible – an abomination . . . a loathsome sight'. Another eyewitness, Mrs H. Finley, exclaimed: 'It was horrible! I wouldn't go to look at it if it was exhibited behind six-inch steel bars!' It is difficult to believe that any mammal, even one as extraordinary as a long-necked seal, would engender such profound feelings of revulsion.

Conversely, as Dr Denys Tucker so judiciously remarked, these are the very types of comment that we would not be at all surprised to hear from people visiting a zoo's reptile house. Just a coincidence?

Super-otters and serpent whales

The category of water monster most likely to be responsible for inspiring the 'sea serpent' name-tag comprises a number of unidentified marine and freshwater creatures with very elongate, serpentine bodies, often of great length and flexibility, that can be thrown upwards into a series of distinctive vertical coils or undulations as the creatures swim.

Ironically, however, whatever their identity may one day prove to be, it will *not* be that of a snake, because snakes undulate horizontally – they cannot flex their bodies vertically. The only serpentine creatures that would have been capable of achieving this mode of swimming are ones belonging to a specialized group currently believed to have died out many millions of years ago. Consequently, the elongate water monsters form another group of animals whose identity might well involve a case of undiscovered prehistoric persistence.

Ogopogo – many-humped monster of Lake Okanagan

Although many people have claimed sightings of water monsters, very few have apparently swum with one, and even fewer have actually touched one! Yet according to Mrs B. Clark, she did all of these things one warm, sunny morning in mid-July 1974, when swimming in British Columbia's Lake Okanagan.

Roughly 79 miles long, 2½ miles wide, and 800 ft deep in places, this is one of North America's most famous 'monster' lakes, for there is a centuries-old tradition that Okanagan harbours a very long, serpentine creature, capable of flexing its body into vertical humps or coils. Westerners nicknamed it Ogopogo (after an English music-hall song from 1924 featuring a banjo-playing water beast from Hindustan, whose '. . . mother was an earwig, his father was a whale'!), but the local Okanakane Indians called it the *naitaka* ('lake monster').

Front cover of sheet music for 'The Ogo-Pogo' foxtrot from 1924 – origin of the Lake Okanagan monster's western name. (Fortean Picture Library)

Now married, at the time of her uniquely close encounter with Ogopogo Mrs B. Clark was a teenage student, and had been swimming near the lake's southern shore at about 8.00 am. She estimated the creature to be 25–30 ft in length, 3–4 ft across, and very dull, dark grey in colour, with light stripes on its back and light round spots on its tail. Its skin appeared smooth and hairless, its body long and narrow, and she believed it to be very curious about her, but she did not see its head as the creature was moving away from her throughout her sighting

– which she described to the International Society of Cryptozoology in 1987:

> I did not see it first. I felt it. I was swimming towards a raft/diving platform located about a quarter of a mile offshore, when something big and heavy bumped my legs. At this point, I was about 3 feet from the raft, and I made a mad dash for it and got out of the water. It was then that I saw it . . .
>
> When I first saw it, it was about 15 to 20 feet away. I could see a hump or coil which was 8 feet long and 4 feet above the water moving in a forward motion. It was travelling north, away from me. It did not seem to be in much of a rush, and it swam very slowly. The water was very clear, and 5 to 10 feet behind the hump, about 5 to 8 feet below the surface, I could see its tail. The tail was forked and horizontal like a whale's, and it was 4 to 6 feet wide. As the hump submerged, the tail came to the surface until its tip poked above the water about a foot . . . About 4 or 5 minutes passed from the time it bumped me until the time it swam from view . . .
>
> It was in the process of diving when I first saw it. It did not completely surface again, but it was so large and the water so clear that I could see it very well as it lazily swam north just a few feet below the surface . . . It swam north in an undulating manner. Although it swam smoothly and well, it created a very large wake. It traveled about 3–5 miles per hour. It moved up and down . . . After it was too far away to see any more, I could still see the large wake for several minutes . . .
>
> At the time, I could not believe my eyes, so I told myself it was just a big fish. However, fish don't grow that big (in lakes anyway) or behave the way this thing did. This thing looked and acted more like a whale than a fish, but I have never seen a whale that skinny and snaky-looking before. Nor have I ever heard of any that fit that description. I have seen killer whales perform at the Vancouver Aquarium, and although the animal I saw had a whale-like tail, it didn't use it the same way as normal whales. By this I mean that it didn't seem to rely on it to the same extent as regular whales. Instead of using it as its main source of propulsion, it kind of 'humped' itself along like a giant inchworm . . . I really have no idea what I saw, but it was definitely not reptilian, and I'm sure it wasn't a fish.

Although unquestionably the most memorable Ogopogo report on file, Mrs Clark's is far from being the only one. Over 200 sightings have been listed by the beast's leading investigator, Arlene Gaal, in her book *Ogopogo – The True Story of the Okanagan Lake Million Dollar Monster* (1986), and others have been reported each year since then. Some of the most notable examples on record include the following ones.

On 2 July 1949, Mr and Mrs L. Kerry were cruising upon the lake near Kelowna with visitors Mr and Mrs W. Watson when they all spied a long sinuous body, dark in colour and about 30 ft long, above the water surface, revealing five vertical undulations and what appeared to be a forked tail. The creature submerged and reappeared several times before finally swimming away, seemingly in pursuit of a shoal of fishes.

Dragon-headed statue of Ogopogo at Kelowna, British Columbia.
(René Dahinden/Fortean Picture Library)

A five-humped monster, with a snake-like head raised 9 in above the water, was spied following about 250 ft behind their boat on 17 July 1959 by *Vernon Advertiser* editor Dick Miller and his wife. And a photo depicting a series of dark humps above the water surface was one of five snapped on 3 August 1976 by Ed Fletcher during a 1½-hour-long motorboat pursuit of Ogopogo – estimated by them to be 70 ft long, it surfaced and submerged more than a dozen times, briefly revealing a flattened, snake-like head at least 2 ft long.

No less startling was the observation made by Mr and Mrs Rowden on 12 September 1976, for while relaxing that day at Okanagan's Peachland government lookout they were privileged to see two Ogopogos – swimming out across the lake to meet one another.

On 19 February 1978, Mrs McAdam from Penticton was just one of 30 eyewitnesses who witnessed the astonishing spectacle of a 50-ft-long snake-like beast frolicking in the sun not far from shore at a campsite

near Penticton. During its cavorting, which lasted for quite a time, several jet-black humps appeared, but eventually it swam out into deeper water.

During the evenings of 18 and 19 July 1989, former car salesman Ken Chaplin videoed an extraordinary object that he claims to be a genuine Ogopogo. The prestigious *National Geographic* magazine was sufficiently impressed by the films to prepare computer-enhanced versions, and in the clearest section a low blackish shape with head raised can be seen moving towards the left, with what appear to be a vertical shoulder-like hump and a tapering tail also visible. The 'shape' then turns to the camera, turns once again, then swiftly flicks its tail upward before slapping the water in a downward motion as it rolls underwater.

Nowadays, inevitably, Ogopogo has become a popular tourist attraction, and for those not fortunate enough to spot the real thing there is an impressive statue, replete with tall vertical coils and an unrealistic dragon-inspired head, on display in the eastern lakeside town of Kelowna. In 1983, the local tourist association announced that a reward of US$ 1,000,000 would be paid to anyone obtaining conclusive proof of the monster's existence before 1 February 1985 – the fact that Ogopogo is still a mystery beast should be sufficient answer to those wondering whether the prize was ever awarded!

Huillia – *an anomaly of arches from Trinidad*

The all-too-common mistake of assuming that serpentine animals performing vertical undulations must be bona fide snakes might explain why, in January 1934, an expedition striving to capture the elusive *huillia* of Trinidad was singularly unsuccessful.

Known from many accounts emanating from the River Ortoire in the island's eastern portion, according to Edward Joseph's *History of Trinidad* (1838) the *huillia* is an elongate water monster measuring 25–50 ft long, which can flex its slender, scaly body into 'arches' that rise and fall as it swims – often at steamboat speeds. It is also said to come ashore and make its way across country, migrating overland from one stretch of water to another.

A backbone capable of rising and falling in arches is not of ophidian origin – on the contrary, it implies a mammalian identity. Sadly, the *huillia*-hunting party that set out in January 1934 was apparently unaware of this fact – because their lure consisted of a Hindu snake-charmer and flute, whose mesmerizing melodies were expected to lull the beast into an obligingly motionless state of slumber, thus enabling them to secure it with ease. If only . . .!

The marvellous migo – *New Guinea's newest mystery beast*

In January 1994, a Japanese TV crew arrived in Papua New Guinea during the rainy season to seek an elongate freshwater monster known to the local tribes as the *migo* or *migaua*. With Professor Roy Mackal as scientific advisor, they travelled to the island of New Britain in the Bismarck Archipelago and thence by sea vessel to a village sited near to a large, horseshoe-shaped lake. Variously referred to as Dakataua and Niugini, it had a diameter of 1,400 ft, a depth of around 30 ft, and contained three small islands plus a submerged volcano.

This lake is the home of the *migo*, but what sets it even further apart from other lakes is the strange fact that it contains no fishes. Consequently, the *migo* prey upon the abundant quantity of waterfowl that settle upon the water surface – which proved to be of great benefit to the team of investigators, because it meant that the *migo* come to the surface much more frequently than is normally true for water monsters elsewhere.

After meeting the village chief and receiving eyewitness descriptions during the third day of their visit, the team actually succeeded in filming a *migo*, shooting a video of it from a range of about 0.7 miles. Judging from the video (since screened in Japan and the USA, but not in Britain so far), the creature was over 33 ft long, swimming at a speed of 4 knots, and exhibiting the vertical undulations characterizing many elongate water monsters.

Following the team's success, the region's provincial government is most anxious for a more extensive expedition to capture a *migo* to be organized as soon as possible – and the creature's official discovery would make it eligible for receiving formal protection.

Ireland's elusive horse-eels

Horse-headed and serpent-bodied, what makes the horse-eels of Ireland more extraordinary than usual even for water monsters is their mystifying ability to inhabit lakes that seem too small to sustain them, only to disappear as soon as these lakes are investigated. Inevitably, such talents have attracted claims that they are paranormal entities, but it is far more likely (and reasonable) that they are simply capable of moving overland from one lake to another.

A typical horse-eel case is that of the Lough Nahooin monster. Only 300 ft long, 240 ft wide, and 23 ft down at its deepest part, this tiny lake is situated close to Claddaghduff in County Galway, and on 22 February 1968 it hosted an important monster sighting. Events began when, while gathering peat in

the early evening with his son and their dog, Stephen Coyne spied a dark object in the water. When his dog began to bark, it revealed itself to be a large peculiar animal that swam towards them with its mouth open – until Coyne moved closer, whereupon the monster turned away and swam on further round the lake. Coyne's wife and their other four children joined him on the shore, viewing the beast in some detail, at as close a range as 15–30 ft for part of the time, before the evening grew too dark.

According to their description, it was about 12 ft long, with a smooth, black, hairless skin whose texture reminded them of an eel's, a slender body that was thrown up into a couple of vertical humps when it lowered its head beneath the water, a briefly glimpsed tail, and a distinct neck with a horse-like head that bore a pair of horn-like projections on top (these have also been mentioned by a number of Ogopogo eyewitnesses). They did not notice its eyes, but when it opened its mouth the interior was pale in colour.

Heartened by the Coynes' account and the ease with which he anticipated investigating such a small lake as this, veteran monster seeker Captain Lionel Leslie organized an attempt to trap the Nahooin beast during July 1968 – leading a team of investigators (which included Professor Mackal, armed with a tissue-collecting gun) who spent two days laying nets across the total breadth of the lake. Once the nets were in place, the investigators used an electronic fish-attractant and other devices to tempt the creature to show itself, but their methods neither cajoled it nor captured it. A second attempt at Nahooin headed by Leslie was made in 1969, following another recent sighting of the creature, and involved dragging chains through the lake as well as netting it, but this was unsuccessful too – leading to the obvious conclusion that the creature was not confined to the lake, but was sufficiently amphibious to be able to come out on to land to avoid danger or to move to another locality if need be.

In 1954, a fork-tailed, elongate, two-humped monster likened by its four frightened eyewitnesses to a giant worm, with a huge mouth and a head raised above the water surface on a slender neck, was spied swimming across Lough Fadda, another of County Galway's minuscule lakes, no more than 1½ miles long and only 1,800 ft across its widest point.

On the road – an overland sea serpent from the Firth of Tay

Just as there are freshwater and marine long-necks, so too are there freshwater and marine versions of the elongate water monsters, which, as with long-necks, are very occasionally seen on land. One of the most remarkable of these seldom-spied occurrences took place during the late evening of 30 September 1965 and was brought to cryptozoological attention by veteran monster hunter F.W. Holiday. It was 11.30 pm, and Maureen Ford (wife of amateur fly-weight boxer David Ford) was driving with some friends along the A85 towards Perth, in north-eastern Scotland. Close to Perth, Ford suddenly spied an extraordinary creature by the roadside, only a few yards from the banks of the River Tay, which enters nearby into the Firth of Tay – an inlet of the North Sea. She described it as: '. . . a long grey shape. It had no legs but I'm sure I saw long pointed ears.'

Less than two hours later, it was seen again – but this time on the opposite side of the road, to where it had evidently crossed during the intervening period. At 1 am, Robert Swankie was driving along the A85 away from Perth towards Dundee, when his head-lights revealed an amazing sight. As he later revealed in a Scottish *Daily Express* report (5 October 1965):

> The head was more than two feet long. It seemed to have pointed ears. The body, which was about 20 feet long, was humped like a giant caterpillar. It was moving very slowly and made a noise like someone dragging a heavy weight through the grass.

Swankie slowed down, and opened his window, but he could see another car not far behind, so he decided not to stop, and continued his journey. His testimony, and also that of Ford, were taped by an enthusiastic investigator, Miss Russell-Fergusson of Clarach Recordings, Oban, and the police were also informed. In the *Express* report, one of their spokesmen commented that in the dark the head-lights of a car could play tricks when they strike walls and trees – but as Holiday sensibly pointed out, if Swankie's sighting had merely been an optical illusion, why didn't he see monsters throughout his road journey? And how can an exclusively visual deception create a dragging sound?

Far more reasonable, surely, is the scenario of a reclusive sea creature emerging under the cover of darkness from the Firth of Tay, possibly via the River Tay itself, and, by sheer chance, being seen by two night travelling eyewitnesses during its brief overland foray.

Cadborosaurus and other marine 'many-humps' of North America

In his classification of sea serpents, those that are

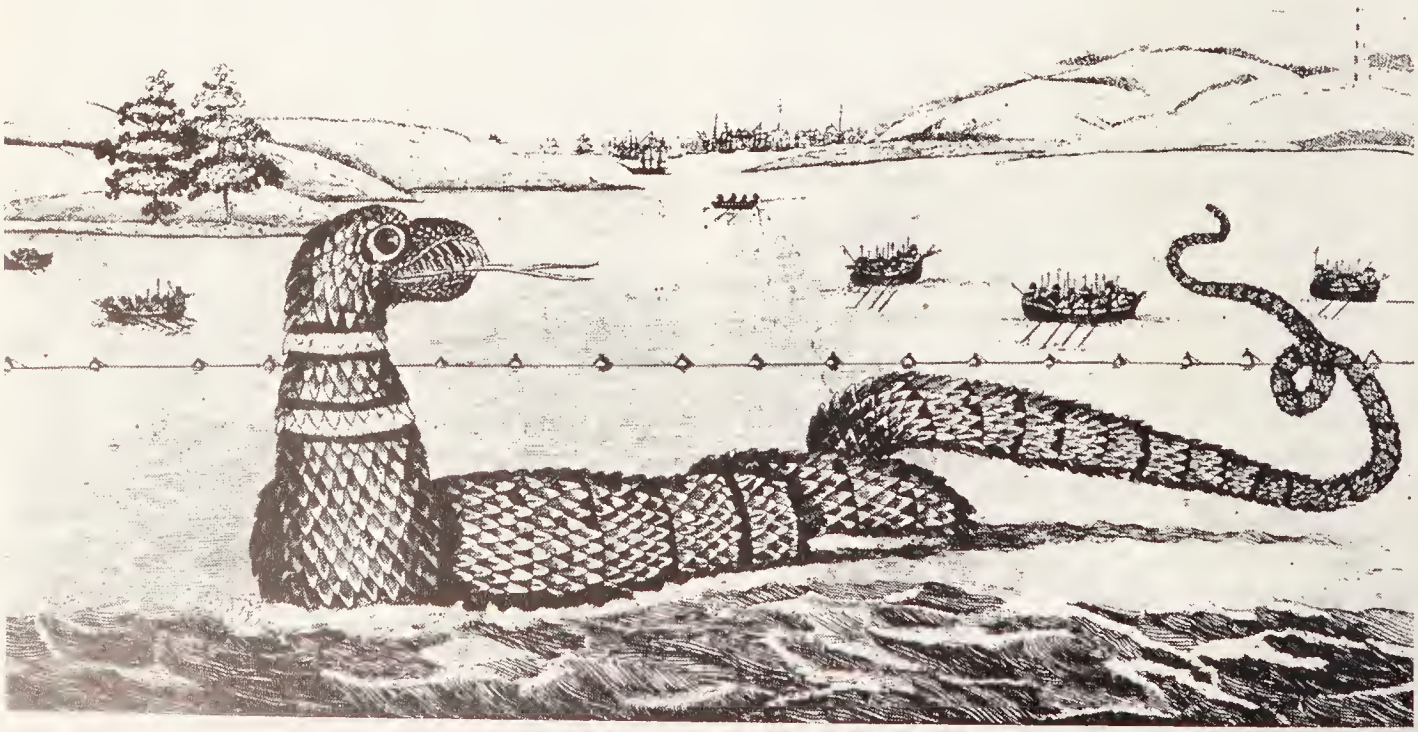
elongate in shape with multiple vertical humps are referred to by Dr Bernard Heuvelmans as 'many-humped' sea serpents, and are most commonly reported in the seas around North America. He has even given their still-uncaptured species a formal scientific name, *Plurigibbosus novaeangliae* – emphasizing the particular prevalence of sightings around the coastline of New England.

The Gloucester sea serpent, for example, was reported by many eyewitnesses from 1817 to 1820 around Gloucester Harbor, Massachusetts, and its legacy included a description that summarizes very succinctly the general appearance of the marine 'many-hump'. According to a news sheet on the monster, dated 22 August 1817, which was printed and sold by Henry Bowen of Boston, its elongate body '. . . resembles a string of buoys on a net rope, as is set in the water to catch herring. Others describe him as like a string of water casks.' In other words, whenever it surfaced, its body yielded a series of small humps. Dark brown or black in colour, with smooth scaleless skin, the creature allegedly measured 65 ft or so in total length, with a snake-like or turtle-like head the size of a horse's skull and held 6–12 in out of the water. Attaining a maximum swimming speed estimated at 40–70 knots and capable of very agile turning movements, it was sighted by all manner of people at all times of the day under all sorts of viewing conditions.

Influenced, however, by the widespread belief at that time that sea serpents really were huge marine snakes, contemporary illustrations of the Gloucester beast generally portrayed it as just that – a gigantic scaly snake (as seen here), with forked tongue and lateral coils (thus ignoring eyewitness testimony that its body was thrown into humps – i.e. vertical coils).

Unfortunately, its erroneously claimed allegiance to the true snakes did not end there. In autumn 1817, a 3-ft-long 'baby sea serpent' with a series of humps along its back was captured in a field near the harbour of Cape Ann, north of Gloucester. When this odd-looking creature was observed by a committee of enthusiastic amateur investigators from the Linnaean Society of New England, it was deemed by them to be a young specimen of the Gloucester sea serpent, whose species was duly christened *Scoliophis atlanticus*, ('Atlantic humped snake'). Unfortunately, when dissected and examined by fish researcher Alexandre Lesueur, it was found merely to be a deformed specimen of an embarrassingly common American snake called the black racer *Coluber constrictor*. Exit *Scoliophis atlanticus*!

North America's western coastline has seen its fair share of elongate water monsters too. One of the most important reports in recent years came from California's San Francisco Bay, featuring eyewitnesses William and Robert Clark. On the morning of 5 February 1985, they were sitting in their car enjoying



Nineteenth-century engraving of the Gloucester sea serpent from Massachusetts. (Fortean Picture Library)

a view of the bay just a few yards ahead when they noticed some seals swimming rapidly away from a wake following swiftly behind them – which, as it came closer, proved to be from an extraordinary beast readily visible in the bay's clear water, resembling a huge black snake or eel, but swimming by vertical undulations of its body.

With a maximum length of 60–75 ft, but an exceedingly slender body no more than 3 ft across, a 10-in-wide neck, a dorsoventrally flattened tail, and a thin snake-like head, the creature was dark brownish-green above, lightish yellow-green below, and although its skin appeared oily it also bore large round or hexagonal scales. Of particular interest was the brief sighting of a fin, when a portion of its attenuate body surfaced through the water – for according to the Clark twins it was triangular in shape, so thin that it was translucent, and contained a series of ribs, giving it a fan-like appearance reminiscent of ray-finned fishes' fins.

The Clarks were afterwards able to prepare a detailed description of the creature's strange method of propulsion, which is unlike that of any animal known to science:

> The shape was definitely that of a snake or an eel, and the head was visible as it swam perhaps only a foot under the water, Behind the head I could see what appeared to be four humps, and the animal appeared to be propelling itself by wriggling in a vertical manner. A series of four coils was created at the front half of its body, and these travelled backwards along the length of the neck where they would meet the middle body. At this point the undulations stopped abruptly and slowly dissipated along the remaining part of the body, which was dragged behind. There would be a short pause and another series of coils would begin . . . this was all happening at a very high speed.

This creature may well belong to the same unidentified species that had been spied at Stinson Beach, north of San Francisco, on 31 October 1983 by several different eyewitnesses, including five members of a construction crew repairing a highway overlooking the sea. According to one of these observers, Matt Ratto, it first appeared as '. . . three bends, like humps, and they rose straight up. Then the head came up to look around', after which the creature turned, lowered its head beneath the surface once more, and moved out to sea, the humps gradually submerging until it was lost to sight. There was agreement among all of the eyewitnesses that the creature was dark, slender, and approximately 100 ft long. Ratto produced a sketch of what he had seen; of particular note, he depicted the humps as vertical hoops, each with a definite space between its undersurface and the sea's surface.

Elongate aquatic monsters reported from British Columbia are not limited to Ogopogo and other freshwater examples – similar creatures have often been sighted around this Canadian province's coastlines too. On 4 February 1934, for instance, duck hunters Cyril H. Andrews and Norman Georgeson spied a long snake-like beast just below the surface of the water surrounding the rocks where they were standing near Gowland Head, South Pender Island. As they attempted to retrieve a duck that they had shot and which had fallen into the sea nearby, their sinuous visitor raised its head and two vertical loops of its body out of the water only a few yards away. Its head was about 3 ft long and resembled a horse's in shape, but had neither ears nor nostrils, and its mouth contained a pointed tongue and fish-like teeth. Its loops were grey-brown in colour with a darker brown stripe running along the side of the body – which tapered towards the tail, and measured about 40 ft in total length.

The loops swiftly submerged again, but the head lingered above the surface just long enough to open its large mouth, seize the duck, and swallow it. Interest in its actions were not confined to the amazed duck hunters, for while it was ingesting its pilfered prey several gulls swooped down towards it. Evidently accustomed to such behaviour, the animal kept them at bay by snapping its jaws from time to time until it finally submerged completely.

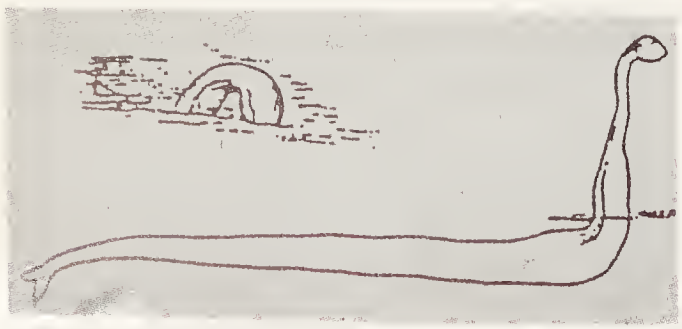
Determined to gain official verification of their encounter, the hunters promptly phoned G.F. Parkyn, the local JP, who duly arrived about 15 minutes later. Not long afterwards, he was rewarded with a good sighting of the beast, when its head and about 12 ft of a 2-ft-wide serpentine body (but undulating vertically) rose up from the water about 20 yards from the shore. Several other local people saw it on this occasion too.

Unquestionably the most famous British Columbian 'many-hump', however, is a creature known to the Chinook Indians as the *hiachuckaluck*, and to the area's westerners as Caddy. Short for Cadborosaurus, this affable name was coined during the 1930s by a local newspaper editor called Archie Wills for the elongate sea serpent frequently spied around Cadboro Bay and the Straits of Georgia, separating Vancouver Island from the province's mainland.

One of the earliest, but also one of the most detailed, eyewitness accounts of a Caddy is that

of prospector Osmond Fergusson, who, with his partner, encountered one of these mystifying animals on the morning of 26 June 1897 near the Queen Charlotte Islands. After their sighting, Fergusson prepared two sketches – a small one (A) showing one of its vertical coils, and a larger one (B) showing the creature in its entirety. Both are reproduced here, and were referred to in his account of their encounter.

> The boat was about 100 yards from shore . . . I saw ahead of us what I thought was a piece of drift wood. On getting closer I noticed it was moving towards us. When within 50 yards I said to Walker (my partner), What is that? It seems to be moving this way (against the tide). What we could see was an object like sketch (A) sticking out of the water about two feet. When within a few feet of it the end uncoiled and raised a long neck about five feet out of the water with a head like a snakes [sic] on it. The arched portion making a broad flat chest like I have seen on the coba [cobra] I think.
>
> When the serpent or whatever it was saw us it turned slightly towards land to avoid the boat. The head and neck were almost immediatly [sic] put under water again. As it passed the boat, at a distance, that with an effort, I could have thrown a[n] oar on it we could see a body about 25 feet long tapering with a fishlike tail and I think a continuous fin running the length of the body.
>
> A slow undulating motion went along the body, while the tail part had a steady sweep from side to side of about six feet. A curious thing was the broad neck or chest part that formed the arch . . . The only part out of water when the head was down was not exposed broadways in the direction the fish was going, but had a decided twist to the left allowing the water to flow through it.



Osmond Fergusson's sketches of Caddy, spied near the Queen Charlotte Islands. (Fortean Picture Library)

Fergusson's sketches depict a species unlike anything known by science to be living today.

Spates of Caddy sightings were reported during the 1930s and 1940s, and in 1937 an alleged Caddy carcass was recovered from the stomach of a sperm whale. Measuring 10–12 ft long, it was mangled and decomposed, but was still distinctive enough to warrant being photographed and afterwards displayed for a time at Naden Harbor whaling station in the Queen Charlotte Islands. According to long-standing Caddy investigator Dr Ed Bousfield, a zoological research associate at the Royal British Columbia Museum, it had been a juvenile Caddy, and three coils behind its neck were still discernible. He and fellow Caddy investigator Professor Paul LeBlond look upon this specimen as important scientific evidence for the existence of Caddy as a distinct animal species. Looking upon it, however, is all that anyone can do now, quite literally – because although a photo of the carcass stretched out upon some packing cases still exists, the body itself was discarded a long time ago.

Another Caddy specimen was lost to science in 1968 – but what makes this case very special even in the annals of cryptozoology, a subject liberally plagued with dematerializing evidence of the corporeal kind, is that the body in question was still alive. According to former sea captain William Hagelund, he had been fishing in Pirate's Cove, De Courcy Island, when he caught a baby 16-in-long Caddy in a dip net, and hauled it aboard his boat, placing it for safe keeping in a bucket of seawater where it remained overnight until he looked at it again the next morning. Describing his remarkable catch and the events that followed:

> His lower jaw had a set of sharp tiny teeth and his back was protected by plate-like scales, while his undersides were covered in a soft yellow fuzz. A pair of small, flipper-like feet protruded from his shoulder area, and a spade-shaped tail proved to be two tiny flipper-like fins that overlapped each other . . . [Observing it the next morning] I felt a strong compassion for that little face staring up at me. I lowered the bucket over the side and watched him swim away quickly.

This action was not only kindhearted but quite possibly of cryptozoological significance too – for such a response is more likely to be evoked by the sight of a mammal than a reptile.

Caddy sightings have continued right up to the present, and may be gaining in importance. During the late afternoon of 14 July 1993, two Caddys were

spied in Saanich Inlet by pilot Don Berends and student pilot James Wells, who were practising landing a Cessna float plane. Each Caddy showed two loops above the water surface before diving, but when the plane landed on the area of the water where they had been, they reappeared about 20–40 ft further ahead, and began moving away at a rapid speed. The pilots could see daylight under the hoops (as with the Stinson sea serpent noted earlier), which were greyish-blue in colour.

This encounter's timing meets Bousfield's expectations. His researches suggest that Saanich Inlet is used by Caddys from 15 June to 31 July each year as a breeding location, and that they move to shallow water with a sandy bottom or to deserted beaches to deliver their live young. This normally happens at night, explaining why they are not seen on land more often.

Someone who claims to have only narrowly missed seeing a Caddy ashore, however, is local resident Terry Osland. Early one morning in June 1991, she had been walking her dog towards the inlet's Ardmore Point beach when the dog became reluctant to go any further, tugging at the lead to go back as they turned by a cliff. Suddenly, Osland discovered the reason for her dog's apprehension; she saw the face of a peculiar animal looking at her above the cliff's edge. The next moment, she heard a terrific splash, and when she peered over the cliff she could see the back end of a huge animal bigger than a killer whale plunging down beneath the surface of the sea. As she watched, however, the front end came up, dispelling any thoughts that the creature might simply have been a whale or seal.

Smooth and hairless, its skin was grey-silver in colour, its neck was extremely long, and its tail '. . . was rounded like a lizard tail and it had, like little feet on the side back of the tail'. This description suggests the presence of a pair of small flukes, like those reported by Fergusson in 1897 and by Hagelund for his baby Caddy.

The great sea-worm of Norway.

Another area of the world where elongate sea monsters have been sighted on many occasions are the icy waters around northern Scandinavia, particularly Norway – the veritable birthplace, in fact, of sea serpent reports. As long ago as 1555, Olaus Magnus, exiled archbishop of Uppsala in Sweden, had included an impressive chronicle of such reports within an exhaustive volume entitled *Historia de Gentibus Septentrionalibus*, dealing with the history of Europe's boreal lands. In this portion of the globe, these animals were generally termed the *sœ-orm* (sea-worm), but their description recalled the North American 'many-hump'.

A good example of this was the extremely serpentine but vertically sinuous specimen spied on several occasions at Heroy, Norway, by two neighbours of Pastor Hans Ström, called Reutz and Tuchsen, while travelling to church by boat. Ström prepared a sketch of the multiple-humped creature (reproduced here) based upon their description, and sent it to Erik Ludvigsen Pontoppidan, Bishop of Bergen, who included it in a major work of the 1750s that was published in English under the title *The Natural History of Norway*. He likened the creature's humps to '. . . so many casks or hogsheads floating in a line' – corresponding precisely with the 'string of casks' description given for the Gloucester sea serpent.

Notwithstanding this, in his analysis of sea serpents Dr Bernard Heuvelmans considered the Norwegian sea-worms and the New World many-humps to be taxonomically different, and dubbed the former

Pastor Hans Ström's sketch of the Heroy sea-worm. (Fortean Picture Library)

Hyperhydra egedei – 'Egede's super-otter'. This distinctive name was inspired by a sea monster roughly 100 ft long, sighted off Godthaab, western Greenland, on 6 July 1734 by a Greenland priest called Hans Egede, who documented it in his book *A Description of Greenland* (1745).

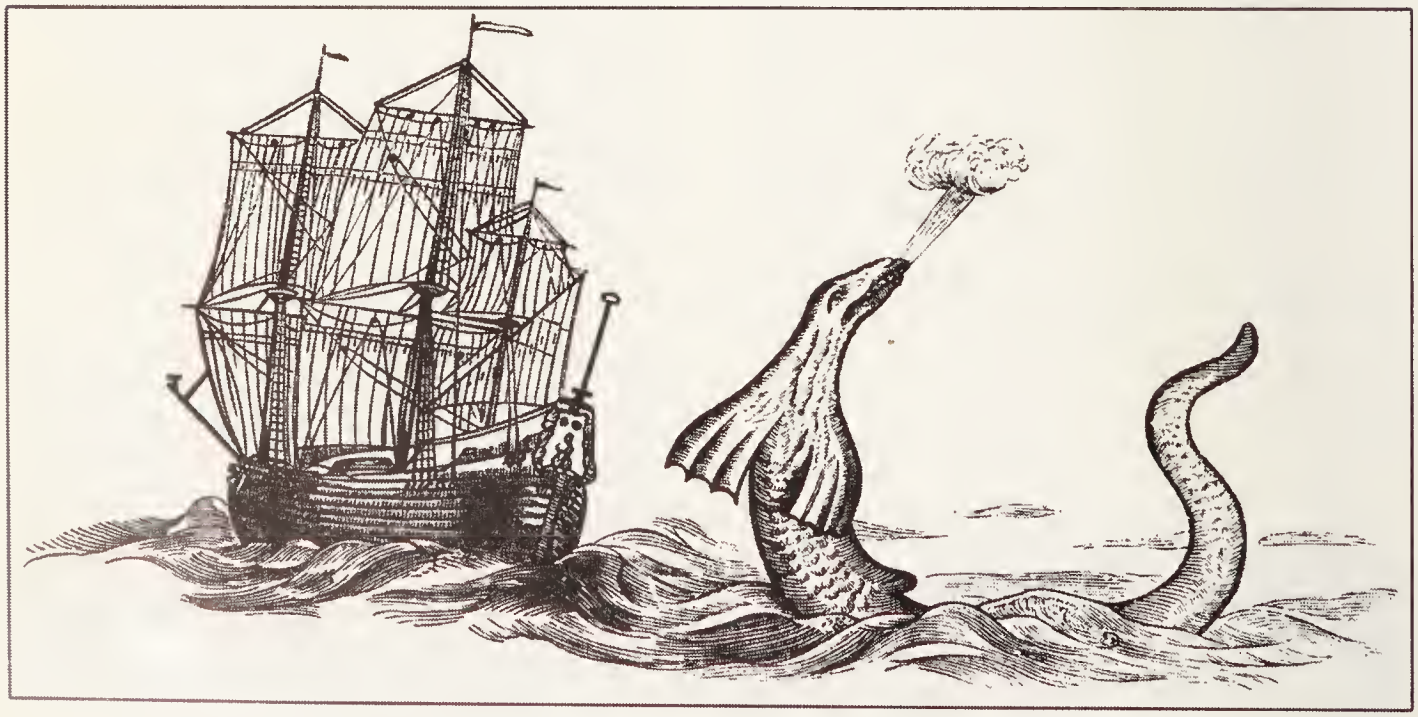
According to Egede, the monster rose up out of the water until its head was as high as his boat's mast-head. Its body was three to four times as long as his ship, but no less bulky, and its skin was so rough and uneven that it looked as if it were covered in scales or a shell. Two features of especial interest were its snout and its forelimbs. Egede recorded that it spouted '. . . like a whale-fish' from its long pointed snout, and described its forelimbs as '. . . great broad paws'. Yet despite its 'paws', it must have been distinctly serpentine, because Egede described its body's underparts as '. . . shaped like an enormous huge serpent'. In addition, its tail, raised aloft after the beast's forequarters had finally plunged back down beneath the waves, seemed '. . . a whole ship's length distant from the bulkiest part of its body'. Another eyewitness, Pastor Bing, soon afterwards produced a sketch of this extraordinary animal, which closely matched Egede's verbal account.

Many of the eyewitness accounts of elongate water monsters given here are so precise and so compelling that there can be little doubt that such creatures exist, as hitherto unknown species. Neither snake nor eel, nor indeed any other known animal alive today, can offer a satisfactory identity for this perplexing category of mystery beast. When we turn to the fossil record for inspiration, however, a very different story emerges.

From archaeocetes to zeuglodonts – an A–Z of serpent whales

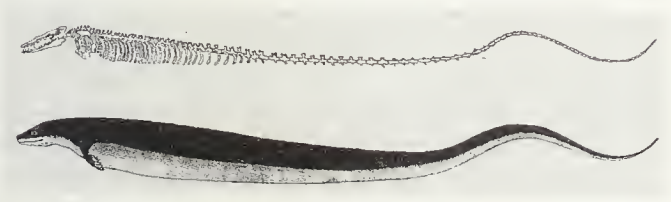
If a palaeontologist were asked to select a veritable sea serpent of the sinuous, near-limbless variety from the pages of prehistory, he would be hard-pressed indeed to come up with anything that corresponds more intimately than a zeuglodont – surely the personification of everything strange and serpentine that has ever been glimpsed undulating through the sometimes tranquil, sometimes tempestuous seas. It is also consistent with the elongate entities reported above from Okanagan and other large bodies of fresh water.

Zeuglodonts belonged to an extinct suborder of cetaceans known as archaeocetes ('ancient whales'), and after thriving through much of the Eocene epoch they officially died out around 25 million years ago. Sometimes over 60 ft in length (as was *Basilosaurus*), they were extremely elongate creatures, the most serpentine mammals ever known to have existed, with a very small head, exceedingly long body, a pair of fin-shaped front limbs, two reduced hind limbs (traditionally portrayed as little more than bony



Hans Egede's sea monster, spied close to Greenland in 1734. (Fortean Picture Library)

vestiges generally buried within the body wall, but see p. 111), plus a long and tapering but very powerful tail flexed dorsoventrally and probably bearing a small pair of horizontal flukes at its tip.



Reconstruction of a zeuglodont. (Fortean Picture Library)

Zeuglodonts were fish-eaters, with slender jaws containing numerous teeth of two principal types – pointed and conical at the front, saw-edged at the back and each resembling two smaller teeth that have been yoked together ('zeuglodon' translates as 'yoke-toothed').

The localities in which the fossilized remains of zeuglodonts have been found indicate not only a widespread zoogeographical distribution for these creatures but also a variety of marine habitats, ranging from shallow offshore seas to the deeper and more open oceanic water. As mentioned earlier with the plesiosaurs, if zeuglodonts migrated into large stretches of fresh water in search of prey or to escape predators (or both) they could also have gradually adapted to a freshwater environment. Moreover, it is supposed that the most serpentine zeuglodonts, such as *Basilosaurus*, were less well adapted for submerging than modern-day cetaceans – which, if true, could help to explain the sizeable number of surface sightings on record for elongate water monsters.

The structure of their vertebrae suggests that zeuglodonts swam by vertical undulations of their exceedingly flexible backbone, thereby contrasting markedly with the horizontal flexures performed by elongate aquatic reptiles such as water snakes, or sinuous fishes like eels. This is of especial cryptozoological importance, since the method of swimming using vertical undulations of the body is characteristic of many of the sinuous water monsters so far described. No known contemporary animal, however, swims in this manner.

Yet despite being highly modified for an aquatic existence, they retained various terrestrial characteristics that were lost in the two more advanced suborders of cetaceans, i.e. the toothed whales (odontocetes) and toothless whales (mysticetes). These include: the forward position of the nasal bones; the limited degree of skull telescoping (compared with the extreme condition displayed by odontocetes and mysticetes); seeking prey by sight and smell rather than utilizing sonar; a flexible neck with unfused vertebrae (fused and thus immobile in more advanced cetaceans) that enabled them to turn their head; and moveable elbow joints (again, fused and therefore rigid in more advanced cetaceans).

Indeed, whereas modern-day cetaceans are exclusively aquatic, zeuglodonts may have been capable of coming ashore for copulation and parturition, as their moveable elbow joints would have facilitated terrestrial locomotion. This ability could explain the apparent migration of horse-eels from one lake to another in Ireland. When on land, zeuglodonts probably moved by humping their body vertically, rather like giant caterpillars – reminiscent of Robert Swankie's sighting near the Firth of Tay in 1965.

Because of the compelling similarity between zeuglodonts and the eyewitness accounts of water monsters of the elongate variety, most cryptozoologists consider it very likely that those unidentified mystery beasts constitute a surviving branch of this 'long-vanished' group of aquatic mammals.

Mrs B. Clark's Ogopogo account, for example, is an uncannily accurate description of what one might expect a living zeuglodont to be like, both in terms of its appearance and its behaviour. Assuming, therefore, that it is a genuine report (and not, as the more cynically minded might suggest, a well-spun yarn inspired by careful reading of books on prehistoric animals that contain descriptions of zeuglodonts), there can be little doubt that the creature was indeed an anachronistic archaeocete. Everything in her report, from the creature's horizontal, forked tail fin and its body's sinuous, serpentine shape to its method of propulsion through vertical undulations and its typically cetacean curiosity regarding its human visitor, instantly recalls a zeuglodont.

One of the observers of the Lough Fadda horse-eel during the 1954 sighting noted earlier was Clifden librarian Georgina Carberry. Observing it at a distance of only 60 ft, she considered the appearance of its body to be decidedly '. . . creepy . . . [as it] seemed to have movement all over it all the time'. Needless to say, this is precisely what one would expect from a vertically undulating, serpentine zeuglodont.

Of course, a living zeuglodont would be an evolved form – 25 million years of intervening evolution would doubtlessly have wrought a number of morphological and physiological modifications. For example, certain elongate water monsters appear able to raise their necks above the water surface.

Although the neck vertebrae of even the most advanced fossil zeuglodonts were still unfused, the vertebrae themselves were only very short – thus the neck could not have achieved this feat. In contrast, the neck vertebrae of earlier zeuglodonts were not only unfused but also quite long. Consequently, if this particular lineage had persisted, and continued evolution had acted in a manner to increase the length of the vertebrae even further, the result would have been a zeuglodont with a neck sufficiently flexible and long to be raised up through the water surface – precisely as reported by eyewitnesses of some elongate water monsters.

Equally, if the skin encompassing the digits (fingers) of the zeuglodonts' forelimbs had gradually become more membranous during evolution, the outcome might well be a fan-like flipper, capable of being expanded and closed, which to an observer untrained in zoology would greatly resemble the fin of a ray-finned (actinopterygian) fish – thus explaining how the San Francisco Bay sea serpent could undulate vertically like a serpentine mammal yet possess ostensibly fish-like fins. And if such fins were relatively slender, they would match those in Osmond Fergusson's sketch of Caddy.

Humps or hoops? That is the question!

Professor Roy Mackal is a leading supporter of the zeuglodont identity for elongate water monsters, particularly Ogopogo, Caddy, and the *migo*. Following his return home to Chicago in February 1994 from New Guinea's Lake Dakataua, he informed me that he has no doubts that the *migo* is indeed a living archaeocete: 'For the first time I understand exactly how snake-like mammals really swim . . . It is clear to me that we are dealing with evolved archaeocetes. The hydrodynamics of the propulsion of these animals is unique and extremely interesting.'

Similarly, a modern-day archaeocete descended from the fossil zeuglodonts is the identity put forward by Heuvelmans for North America's 'many-humped' sea serpent. However, he goes on to explain the creature's humps as genuine dorsal projections – even considering a possibility proposed by Ivan Sanderson that they are inflatable hydrostatic and buoyancy organs used as reserves of air for prolonged dives. This explanation has also been offered by supporters of the plesiosaur identity for long-necks, which often possess one or more humps (though never anywhere near as many as the elongate water monsters).

Yet as revealed, for instance, by Ratto's sketch of the Stinson beast, and by the pilots' description of the Caddys that they encountered, when raised sufficiently high out of the water the humps prove not to be humps at all, but rather hoops, with daylight seen between their under surface and the water's surface. In other words, in the case of the elongate water monsters the humps are not exposed, solid projections borne upon the back of a much more substantial, submerged body (as would seem to be true for hump-yielding long-necks). Instead, they are exposed, vertically undulating, hooped portions of the body itself – a body, furthermore, that is extremely slender and serpentine.

First ancestors and walking whales

As noted earlier, Heuvelmans believes the Norwegian sea-worm to be distinct from the American 'many-hump', referring to it as *Hyperhydra*, the super-otter, on account of its superficially otter-like appearance despite its much greater size. Nevertheless, he does believe it to be an archaeocete, like the 'many-hump', but one descended from a much more primitive, pre-zeuglodont stage in these cetaceans' evolution.

Despite having only the merest vestige of hind limbs today, cetaceans are ultimately descended from quadrupedal land mammals – specifically, a group of hyaena-like condylarths called mesonychids – hence there must have been some point during their evolutionary transformation into aquatic beasts when they still possessed hind legs. In his book *Follow the Whale* (1956), Ivan Sanderson referred to these earliest cetaceans as 'first ancestors', and speculated that some might even survive today. Developing this intriguing prospect, in his own book Heuvelmans proposed that the super-otter may be a modern-day version of these creatures – equipped with a lengthy, highly flexible backbone and tail readily capable of vertical undulations, and two pairs of paw-like flippers (thereby explaining the unusual appendages described by Egede for the sea monster that he spied at Godthaab).

Although an undeniable prerequisite in the evolution of cetaceans, for a very long time the one-time existence of 'first ancestors' remained unconfirmed by the fossil record. It almost seemed as if the cetaceans had sprung into being in truest Athena-style, fully-equipped with all of their sophisticated specializations for an exclusively aquatic mode of life – and then along came *Ambulocetus*, the whale that walked.

In *Science* (14 January 1994), Drs J.G.M. Thewissen from Northeastern Ohio Universities College of Medicine, S.T. Hussain of Washington DC's Howard University, and Islamabad-based M. Arif described a

major new species of fossil mammal, represented by several specimens, including a skeleton and partly-articulated long-snouted skull, recently unearthed from river deposits in Pakistan's Kuldana Formation that are around 52 million years old.

Its skull, dentition, vertebrae, and forelimbs labelled it as a primitive cetacean, roughly the size of an adult male South American sealion (around 9 ft long, weighing 600–700 lb). But what instantly distinguished it from any previously recorded species was its well-formed pair of hind legs, with greatly enlarged webbed feet. Also, its tail was probably much longer than in modern cetaceans, judging from the elongate shape of the sole caudal vertebra recovered with the remainder of the skeleton – hence it may well have lacked tail flukes.

Its long backbone (the shape of whose lumbar vertebrae indicate that it was very flexible dorsoventrally), the structure and size of its hind legs (longer than the forelegs), and their well-developed feet collectively suggest that this species swam somewhat like otters. That is to say, it undulated its backbone and paddled up and down with its hind feet – in marked contrast to modern cetaceans, which rely upon powerful vertical strokes of their horizontal fluke-bearing tail as their principal means of propulsion. In addition, its hind legs would have enabled it to move around on land, albeit somewhat clumsily, in the fashion of sealions – something that no present-day cetacean can do.

Emphasizing its unique capability, for a cetacean, to locomote both in the sea and on land, Thewissen and his colleagues dubbed it *Ambulocetus natans*, the swimming walking whale. Needless to say, *Ambulocetus* has attracted enormous interest from palaeontologists and taxonomists alike, but, less obviously, its discovery has also been a great boon for cryptozoology.

For here is a creature that corresponds very closely indeed to Heuvelmans's hypothetical super-otter, the product of his imaginative reconstruction of the likely morphology of the Norwegian sea-worm. A modern-day descendant of *Ambulocetus*, retaining its general shape, its two pairs of limbs, flexible backbone, and long tail, but at the same time greatly increasing its total length, could well be a perfect match for the super-otter.

Perhaps, therefore, a twentieth century *Ambulocetus* does indeed exist, amid the Arctic waters of the far north. To my mind, however, there could well be a less radical solution than walking whales and super-otters to the mystery of the Arctic's elongate water monsters.

Quadrupedal zeuglodonts

To begin with: Egede's description of his monster's front limbs as paws need not be as literal as it sounds. As noted earlier with the San Francisco Bay sea serpent, the limbs might simply have been fins with prominent digits (finger bones) encased in a fairly thin covering of skin, which could look rather like paws to the zoologically untrained observer – or, indeed, to anyone unexpectedly confronted (like Egede) with the alarming spectacle of a massive, unfamiliar sea beast suddenly rearing up out of the water in close proximity to their boat!

Some sea-worm eyewitnesses claim that these animals have hind limbs as well as forelimbs – one reason why Heuvelmans proposed the super-otter identity, thus separating off the sea-worm from all other vertically undulating elongate water monsters. Thanks to a very relevant, recent palaeontological find, however, I no longer see any reason for this separation, because the identity that has already been put forward to explain all of these other beasts (i.e. a living zeuglodont) can now readily deal with the sea-worm too.

In 1987 and 1989, Michigan University palaeontologist Dr Philip Gingerich and Dr Holly Smith, with Duke University colleague Dr Elwyn Simons, mapped out 243 partial skeletons of a very serpentine, 50-ft-long species of Middle Eocene zeuglodont called *Basilosaurus isis* – excavated from an Egyptian site so renowned for its plentiful *Basilosaurus* fossils that it is known as Zeuglodon Valley. The 1989 digs yielded several nearly complete skeletons, which, for the first time, included functional pelvic limb and foot bones. Until then, the only known hind limb bones from these sinuous creatures were so incomplete that they were mistakenly thought to be functionless and vestigial – responsible in turn for the traditional belief that, just like modern cetaceans, zeuglodonts basically lacked external hind limbs.

Although the hind legs were only about 2 ft long, they were well formed, rather than atrophied as one might have expected if these limbs no longer served any useful purpose. Consequently, their trio of discoverers considered that they must have fulfilled some function – but what could it be? They were evidently too small to assist locomotion, either in the sea or on land, but when their investigators found that the ankles could still move, and the kneecaps could click up and down like an electric switch, a very different but plausible alternative scenario began to emerge. The ability to perform these movements could enable the hind limbs to act as guides in the correct positioning of zeuglodonts alongside one

another for successful copulation (*Science*, 13 July 1990).

As far as cryptozoology is concerned, a modern-day zeuglodont with externally visible hind limbs would be more than sufficient to explain the sea-worm – thereby rendering obsolete the need to invent super-otters or any other separate identity for this creature.

In his book *Bronze Age America* (1982), Professor H. Barry Fell depicted several petroglyphs discovered at Peterborough, near Toronto in Ontario, Canada, and dating from around 1700 BC. One of these could have great bearing upon the possible relationship of the elongate water monsters to the four-legged zeuglodonts. It shows an extremely elongate beast, with a horse-like head and short horns (or pricked ears?) borne upon a curved erect neck, which merges almost imperceptibly into a long slender body possessing what appear to be two small pairs of limbs. Interestingly, the body curves upwards from the neck as far as a point beyond the hind limbs, whereupon it then executes a sharp downward turn, yielding a long tail that terminates in a pair of flukes. Underneath this petroglyph is a strange inscription – W–A–L – that seems to be of Nordic origin, and Fell notes that *hval* is Old Norse for 'whale'.

Petroglyph at Peterborough, Canada, depicting a zeuglodont-like 'whale'. (adapted from sketch in Bronze Age America *by H. Barry Fell)*

Whatever the creature is meant to be, it surely cannot be a whale, however, for there is no known form of advanced, modern-day cetacean that looks anything like it. In stark contrast, it is a strikingly accurate depiction of the vertically undulating, elongate water monsters frequently reported from the lakes and seas of Canada – so much so that it could be easily taken to be a sketch made by one of these beast's twentieth century eyewitnesses. And except for its horns or ears, it also bears a striking resemblance to what we now know the zeuglodonts to have been like, i.e. possessing four external limbs instead of two.

Could the Peterborough petroglyph therefore lay claim to the world's oldest illustration of a cryptozoological water monster – a Bronze Age eyewitness's portrait of a still-undiscovered species of evolved, present-day zeuglodont? There are a number of other serpentine beasts depicted in various examples of ancient art around the world, but none can match the extent of detail exhibited by this particular one, which includes morphological features whose very existence was only unveiled by science as recently as 1989. A poor rendition of a modern cetacean? Or an excellent portrayal of a four-limbed *living* zeuglodont? When Ogopogo finally makes itself available for study, we will then be able to decide for ourselves.

Returning to the concept of the 'super-otter' for a moment. Firstly: although it is associated nowadays with the question of sea serpent identification, a giant elongate beast that *resembles* an otter without necessarily *being* an otter had been proposed as long ago as 1961 as a possible explanation for some terrestrial encounters with Nessie, by zoologist Dr Maurice Burton, in his book *The Elusive Monster.*

Secondly: is it possible that the Norwegian sea-worm is more than just a super-otter in name only? Although such a theory is far more radical than those that propose a cetacean identity for this type of elongate sea monster, could the sea-worm actually be an undiscovered species of giant marine otter, much bigger and even more specialized for an aquatic existence than those otters currently known to science? The swimming behaviour of such a beast with a highly flexible backbone could correspond well with that of the sea-worm – and the sea otter *Enhydra lutris* confirms that the evolution of an otter well adapted for a marine existence is not an unreasonable supposition. Similarly, the existence of a 7-ft-long species of freshwater otter in South America, the impressive saro *Pteronura brasiliensis*, shows that a tendency towards gigantism in this group of mammals is indeed present.

In fact, Heuvelmans, Mackal, and various other cryptozoologists believe that a huge freshwater otter exceeding even the saro in total length may explain the *iemisch* – a currently unidentified type of South American water monster.

Nevertheless, when comparing the claims of a taxonomically genuine super-otter and a possible archaeocete namesake as the sea-worm's identity, I prefer to adopt the same viewpoint as I did when assessing the relative merits of the hypothetical giraffe-necked pinniped *Megalotaria*, and a modern-day plesiosaur in relation to the identity of the long-neck (see p. 93).

Abandoning the armoured archaeocetes

It is both interesting and inconvenient to note that certain zeuglodont-like water monsters, such as the San Francisco Bay sea serpent, the *huillia* of Trinidad, and Hans Egede's 'sea-worm with paws', were said to be scaly. Surely a scale-bearing water monster cannot be reconciled with a zeuglodont? Ironically, for quite a time this characteristic actually *enhanced* these monsters' degree of correspondence to serpentine whales – because archaeocete remains have been recorded that were in association with plate-like scales, which were assumed to have become detached from their skin during the fossilization process. These finds led to the concept of armoured archaeocetes, possessing dermal scales – from which the prospect of a living armoured archaeocete as the identity of vertically undulating, scaly water monsters was a natural progression in cryptozoological thought.

Today, however, armoured archaeocetes have quietly disappeared from the palaeontological textbooks. The common consensus nowadays is that the skin of these primitive cetaceans was unscaled, with those scales discovered in association with various fossil specimens belonging to some other creature instead – a severe blow to cryptozoologists striving to identify those modern-day zeuglodont look-alikes that allegedly bear scales.

However, there is no certainty that what was observed was in fact scales. A surface can appear scaly without actually being scaled. A rough skin may look scaly – and judging from Egede's description of his sea-worm, this is likely to be the answer in that instance. Perhaps the skin bears a pattern of markings or ridges that give the impression of scales without actually being scaled – a plausible solution to the San Francisco Bay sea serpent and the *huillia*.

Of course, scaly mammals are hardly unknown – as evinced by the pangolins and armadillos, belonging to two totally separate taxonomic orders. So we cannot, in any case, rule out entirely the possibility of an evolved zeuglodont with scales. Nevertheless, the relative scarcity of sightings featuring scaly elongate water monsters flexing vertically suggests that their scales may owe more to optical illusion than (epi)dermal reality.

Out of all of the prehistoric survivors mooted in this chapter as plausible identities for various types of unexplained water monster, I consider the existence of an undiscovered species of living zeuglodont to be by far the most likely prospect. These veritable serpent whales were ideally suited for an efficient aquatic existence, and by lacking the sonar-controlled mechanism of navigation developed by more advanced cetaceans they would not be vulnerable to the threat of beaching themselves if their sonar malfunctioned. Indeed, even if they *were* somehow cast ashore, their flexible backbone, neck, and limbs would have permitted them to clamber back into the water, or to travel overland and seek out another aquatic habitat. I simply cannot see why at least one lineage of zeuglodonts could not have persisted into modern times. As the only serpentine mammals in existence, they would be ecologically unique, and their exceptionally lithe mode of locomotion would be of great benefit in helping them to avoid any unwelcome attention from mankind.

Some sceptics say that the reason science has yet to discover a living zeuglodont is that such creatures do not exist. To my mind, the reason for science's failure is, quite simply, that it has yet to devise the correct means of discovering them. That is the real problem facing today's seekers of elongate water monsters; the monsters themselves are, if anything, little more than a technicality, albeit a fascinating one. I cannot help but wonder what an enterprising postgraduate researcher might come up with, if offered such a challenge by way of a PhD project. Zoology departments everywhere, take note!

Sea crocodiles, sea lizards, and the kin of the kronosaurs

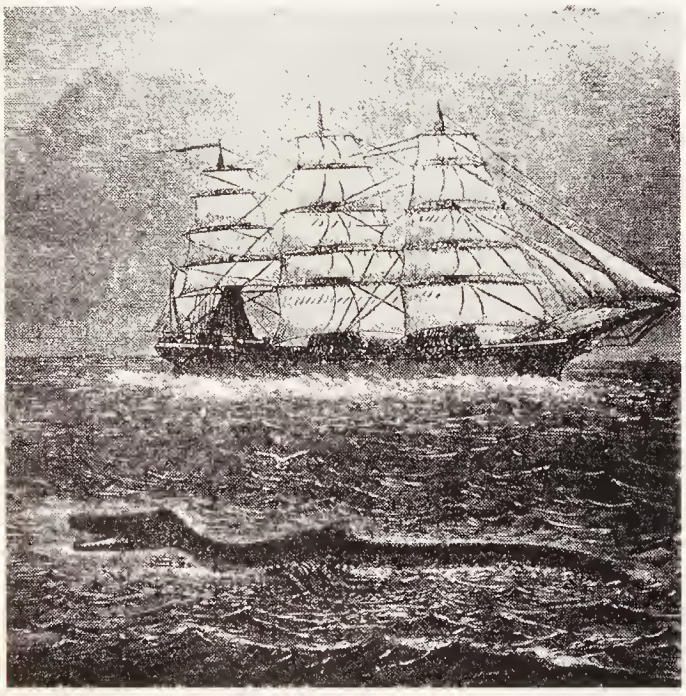
Cryptozoology's water monster files contain a number of reports that feature formidable creatures more than a little reminiscent of certain lineages of prehistoric reptiles other than the familiar long-necked plesiosaurs, as revealed here.

From Sacramento *to submarine*

On 30 July 1877 while travelling in the mid-Atlantic from New York to Melbourne aboard a ship called the *Sacramento*, a helmsman and his commander, Captain W.H. Nelson, spied a 50–60-ft-long monster lying at the surface of the sea, with its head raised about 3 ft above the water. Unlike any of the water monsters previously documented in this chapter, however, its head was very like an alligator's, and about 10 ft behind this was a pair of flippers. Its body was reddish-brown, and resembled that of a very large snake. As the two men watched, the creature began to move away, and when it was 30–40 ft astern it lowered its head.

During a journey from New York to Belém, near the mouth of the Amazon River in Brazil, the steamer *Grangense* apparently encountered a similar beast,

when, one morning in May 1901, passenger Charles Seibert and others aboard spied an unidentified animal frolicking in the sea nearby. Its head was crocodilian in shape, its neck short, its body greyish-brown, its jaws contained rows of 4–6-in-long teeth, and it twisted around in horizontal circles at the surface as it played before diving out of sight.



The Sacramento *sea serpent.*
(Fortean Picture Library)

One of the most dramatic sightings featuring a water monster from this category occurred on 30 July 1915, directly after a German submarine called the *U-28* had torpedoed the British steamer *Iberian* off Fastnet Rock, Ireland. Less than a minute after the steamer had sunk, a violent explosion took place beneath the surface, blasting up out of the sea some pieces of wreckage – and a writhing sea monster! According to the *U-28*'s captain, Georg Günther Freiherr von Forstner, the creature was quite immense, measuring around 60 ft long and shaped like a crocodile, with a long tail tapering to a point, and four limbs with powerful webbed feet. Referring to it as 'the underwater crocodile', he and the crew gazed at it in wonder before it fell back into the sea and vanished 10–15 seconds later.

As the creature was seen (however briefly) in its entirety, this is potentially a very important case in the water monster files – which makes it all the more frustrating that Forstner's account is surrounded by controversy. To begin with, he didn't even mention the sighting to anyone until 1933 – which just happens to be the year in which the Loch Ness monster began to feature extensively in the news worldwide. Moreover, he estimated that the *Iberian* must have sunk to a depth of about 500 fathoms before the explosion took place – but as this supposedly occurred a mere 25 seconds or so after the ship had been hit, the speed of submergence involved would have approached a highly unlikely 90 miles an hour!

Forstner was even vague concerning the location, merely giving 'the North Atlantic' at first. Only in 1942, within his own German translation of Rupert Gould's book *The Case For the Sea Serpent*, did he divulge that it had taken place off Fastnet Rock.

Also of interest here, as discovered by German investigator Ulrich Magin, is that although the local Irish newspapers had reported the sinking of the *Iberian* they had not included any mention of a borne-aloft sea monster. Nor was it that these newspapers had any aversion to sea monster stories – only a week later, one of them published an account of a much less spectacular sighting. Consequently, Magin speculates that such inconsistencies imply a hoax.

Although sightings of this short-necked reptilian form of water monster are reported far less frequently than those of the long-neck and vertically undulating elongate versions, they have continued to emerge spasmodically right up to the present day. A quite extraordinary case from the 1980s in Gambia is discussed in detail a little later here, and as recently as September 1993 a vicar and his son claimed to have seen a creature larger than a whale but resembling a giant lizard surface near to them as they fished off the Cook Islands, which lie 2,000 miles north-east of New Zealand. Not surprisingly, they quickly lost interest in their fishing and sailed away in their boat shortly afterwards.

The following report probably owes more to native legend and imagination than to fact, but I am including it here because, whereas all of this section's other water monsters are marine, it features what could be a freshwater version – and thus, if indeed genuine, is of particular cryptozoological significance. Traveller Alfred G. Hales heard tell of it from the Indians while far up the Brazilian Amazon, and included it in *Barney O'Hea. Trapper* (1932). It was reiterated by Harold T. Wilkins in *Secret Cities of Old South America* (1952):

> This monster inhabits recesses of lush and steamy marshes and lagoons. One night, an Indian, fearing to sleep ashore, anchored his canoe in mid-stream.

> In the middle of the night he woke up and gazed ashore to the woods. There, his eyes were caught and fixed by two queer moons that seemed gently to sway in the tree-tops. They had a hypnotic force that made him take up his paddles and row ashore. The moons continued gently and rhythmically swaying, and turned golden green. The Indian, as one mesmerized, heard unearthly music and drums beat. Time seemed no more. He was nearing the shore and death, when, on a sudden, came a great wave of water under the bow of his canoe, and the moon, emerging from a break in the dense trees of the forest, lit up a scene from the Mesozoic Age. An immense reptile of species unknown rose from the waters and clashed his immense, tusked jaws on the neck of a giant anaconda. A frightful struggle followed and the tremendous coils of the snake were dragged from the tree down into the waters of the river. Mr Hales makes the significant comment that snakes with these mesmeric powers are seen near ancient temples in the forests of Brazil, luring parrots, with hypnotic eyes that rapidly change their lights from green to crimson.

The giant anaconda's equally enormous assassin might simply have been a very big caiman – those evil-tempered cousins to the crocodiles and alligators that bedevil the larger rivers of Central and South America. Yet these creatures are only too familiar to the natives who live in constant dread of their lethal jaws. So why should this particular reptile be considered as an unknown species – unless, of course, it really was?

Pliosaurs, mosasaurs, and thalattosuchians

There are three totally separate groups of extinct aquatic reptiles known from the fossil record that provide much food for thought when reflecting upon the possible identity of the water monsters documented in this particular section.

The pliosaurs were a group of plesiosaurs whose morphological evolution followed a very different path from that of their more familiar long-necked relatives. Like the latter reptiles they did have two pairs of long paddle-like flippers and a sturdy body, and they apparently swam in the same manner too, but instead of a long slender neck, short tail, small head, and short jaws, the pliosaurs were characterized by a very short, thick neck, a long powerful tail, and an extremely long, broad head and jaws – rather like those of the crocodilians.

The most formidable and ferocious marine reptiles of all time, culminating in an awesome 40-ft-long monster from Australia called *Kronosaurus*, the pliosaurs lived alongside (and actively preyed upon) the true (i.e. long-necked) plesiosaurs right up to the end of the Cretaceous Period, after which both groups officially died out.

Sharing the oceans with the pliosaurs and plesiosaurs during the late Cretaceous were the mosasaurs – a group of extremely large lizards related to the monitors (which include the famous 10-ft-long Komodo dragon) but highly specialized for an exclusively aquatic existence. Their bodies were long and streamlined, their limbs had become flippers, and their lengthy tails were flattened laterally, and bore a prominent vertical fin.

Like the pliosaurs, mosasaurs had a very large head with long jaws that contained many conical teeth for breaking open ammonites, trilobites, and other shelled marine life. Some forms also attained a considerable size – North America's *Tylosaurus* was 25–30 ft long.

Reconstruction of Tylosaurus, *a giant prehistoric mosasaur.*

Pliosaurs seemingly had a smooth, scaleless skin, but the mosasaurs are known from some well-preserved fossilized remains to have been scaly, just like other lizards. They also had a prominent dorsal fin and, whereas the body of pliosaurs and plesiosaurs was relatively rigid, the mosasaurs swam by powerful horizontal undulations of their body, rather like snakes.

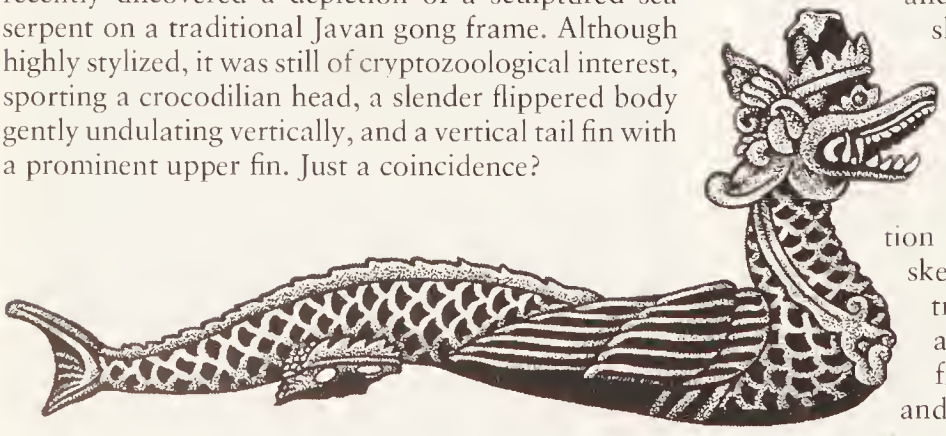
Less well known and somewhat smaller than those reptiles mentioned here so far, but no less specialized for a marine lifestyle, the third group comprises the

sea-crocodiles or thalattosuchians, which were up to about 12 ft long. According to the fossil record, these were a relatively short-lived group that died out long before the pliosaurs and mosasaurs, having vanished by the middle of the Cretaceous Period, around 110 million years ago.

Unlike today's crocodiles and alligators, the thalattosuchians had flippers instead of legs and clawed feet, an elongate, scaleless body, and a long slender tail that curved sharply downwards but bore a prominent upper fin. Moreover, by virtue of their unusually shaped vertebrae, which bore a surprising resemblance to those of whales, they possessed the unique ability among reptiles to flex their backbone *vertically*, just like mammals.

This highly unexpected characteristic is of great cryptozoological significance because, as French palaeontologist Dr Eric Buffetaut has pointed out, it means that a reptile identity cannot be automatically dismissed in favour of a mammalian one when analysing reports of water monsters that flex their bodies vertically, especially if their head is reptilian in form.

In view of this, I was greatly intrigued when I recently uncovered a depiction of a sculptured sea serpent on a traditional Javan gong frame. Although highly stylized, it was still of cryptozoological interest, sporting a crocodilian head, a slender flippered body gently undulating vertically, and a vertical tail fin with a prominent upper fin. Just a coincidence?



Reptilian sea serpent sculpted upon a traditional Javanese gong frame.

Any of these three groups of marine reptile could be responsible for any or all of the water monster reports documented in this section, because the reports do not provide sufficient morphological details to enable an extensive taxonomic analysis to be attempted. All that can be stated with a degree of confidence is that such monsters are certainly more similar to these three reptilian identities than they are to any other identity available.

The only sure way of distinguishing between this trio of identities, therefore, in relation to a water monster of the type documented in this section is to obtain an actual specimen, or at least a notable portion of one (such as the skull, some vertebrae, or a flipper). Not a likely occurrence, you may think – yet in 1983, this very nearly happened!

The Gambian sea serpent – a stranger on the shore

On 12 June 1983, wildlife enthusiast Owen Burnham and three family members encountered the carcass of a huge sea creature, washed up on to a beach in Gambia. Most sea monster remains are discovered in an advanced state of decomposition, greatly distorting their appearance and making positive identification very difficult, but the carcass found by Burnham was exceptional, as it was largely intact, with no external decomposition.

Now residing in England but having lived most of his life in Senegal, Burnham was very familiar with all of that region's major land and sea creatures, but he had never seen anything like this before. Realizing its potential zoological significance, he made meticulous sketches and observations of its outward morphology, and noted all of its principal measurements.

In May 1986, a British magazine published a short account by Mr Burnham describing his discovery, and including versions of his original sketches. Greatly interested, I wrote to him, requesting further details, in order to attempt to identify this remarkable creature. During our correspondence, Burnham kindly gave me a comprehensive description of its appearance as well as his sketches. The following is an edited transcript of Burnham's first-hand account of his discovery, prepared from his letters to me of May, June, and July 1986:

I grew up in Senegal (West Africa) and am an honorary member of the Mandinka tribe. I speak the language fluently and this greatly helped me in getting around. I'm very interested in all forms of life and make copious observations on anything unusual.

In the neighbouring country of Gambia we often went on holiday and it was on one such event that I found this remarkable animal.

June 1983. An enormous animal was washed up on the beach during the night and this morning [June 12] at 8.30 am I, my brother and sister and father discovered two Africans trying to sever its head so as to sell the skull to tourists. The site of the discovery was on the beach below Bungalow

Beach Hotel. The only river of any significance in the area is the Gambia river. We measured the animal by first drawing a line in the sand alongside the creature then measuring with a tape measure. The flippers and head were measured individually and I counted the teeth [In the sketches accompanying his description, Burnham provided the following measurements: Total Length = 15–16 ft; Head+Body Length = 10 ft, Tail Length = 4½–5 ft; Snout Length = 1½ ft; Flipper Length = 1½ ft.]

The creature was brown above and white below (to midway down the tail).

The jaws were long and thin with eighty teeth evenly distributed. They were similar in shape to a barracuda's but whiter and thicker (also very sharp). All the teeth were uniform. The animal's jaws were very tightly closed and it was a job to prise them apart.

The jaws were longer than a dolphin's. There was no sign of any blowhole but there were what appeared to be two nostrils at the end of the snout. The creature can't have been dead for long because its eyes were clearly visible and brown although I don't know if this was due to death. (They weren't protruding). The forehead was domed though not excessively. (No ears).

The animal was foul smelling but not falling apart. I've seen dolphins in a similar state after five days (after death) so I estimate it had been dead that long.

The skin surface was smooth, the only area of damage was where one of the flippers (hind) had been ripped off. A large piece of skin was loose. There were no mammary glands present and any male organs were too damaged to be recognizable. The other flipper (hind) was damaged but not too badly. I couldn't see any bones.

I must mention clearly that the animal wasn't falling apart and the *only* damage was in the area (above) I just mentioned. The only organs I saw were some intestines from the damaged area.

The paddles were round and solid. There were no toes, claws or nails. The body of the creature was distended by gas so I would imagine it to be more streamlined in life. It *wasn't* noticeably flattened. The tail was rounded [in cross-section], not quite triangular.

I didn't (unfortunately) have a camera with me at the time so I made the most detailed observations I could. It was a real shock. I couldn't believe this creature was laying in front of me. I didn't have a chance to collect the head because some Africans came and took the head (to keep skull) to sell to tourists at an exorbitant price. I almost bought it but didn't know how I'd get it to England. The vertebrae were *very* thick and the flesh dark red (like beef). It took the men twenty minutes of hacking with a machete to sever it.

I asked the men on the scene what the name of this animal was. They were from a fishing community and gave me the Mandinka name *kunthum belein*. I asked around in many villages along the coast, notably Kap Skirring in Senegal where I once saw a dolphin's head for sale. The name means 'cutting jaws' and is the term for dolphin everywhere. Although I gave good descriptions to native fishermen they said they had never seen it. The name *kunthum belein* always gave [elicited] a dolphin for reply and drawings they made were clearly that. I also asked at Kouniara, a fishing village further up the Casamance river but with no success. I can only assume that the butchers called it by that name due to its superficial similarities. In Mandinka, similar or unknown animals are given the name of a well known one. For example a serval is called a little leopard. So it obviously wasn't common. I've been on the coast many times and have never seen anything like it again.

I wrote to various authorities. [One] said it was probably a dolphin whose flukes had worn off in the water. This doesn't explain the *long pointed tail* or lack of dorsal fin (or damage).

[Another] decided it could be the rare *Tasmacetus shepherdi* whose tail flukes had worn off. This man mentioned that the blow hole could have closed after death. Again the tail and narrow jaws seem to conflict with this. *Tasmacetus*'s jaws aren't too long and the head itself seems to be smaller than my animal's. *Tasmacetus* has two fore flippers and none in the pelvic region. The two flippers are quite small in relation to body size and pointed rather than round. *Tasmacetus* has a dorsal fin and 'my' animal didn't seem to have one or any signs of one having once been there. *Tasmacetus* even without tail flukes wouldn't have a tail long enough or pointed enough. The tail of the animal I saw was very long. It had a definite point and didn't look suited for a pair of flukes. Apparently, *Tasmacetus* is brown above and white below and this seems to be the only link between the two animals. I've been to many remote and also popular fishing areas in Senegal and I have seen the decomposing remains of sharks and also dead dolphins and this was so different.

[A third] said it must have been a manatee. I've

seen them and believe me it wasn't that. The skin thickness was the same but the resemblance ended there.

Other authorities have suggested crocodiles and such things but as you see from the description it just can't have been.

After I think of the coelacanth I don't like to think what could be at the bottom of the sea. What about the shark (*Megachasma*) [megamouth shark] which was fished up on an anchor in 1976?

I looked through encyclopedias and every book I could lay hands on and eventually I found a photo of the skull of *Kronosaurus queenslandicus* which is the nearest thing so far. Unfortunately the skull of that beast is apparently ten feet long and clearly not of my find.

The skeleton of *Ichthyosaurus* (not head) is quite similar if you imagine the fleshed animal with a pointed tail instead of flukes. I spend hours at the Natural History Museum [in London, England] looking at their small plesiosaurs, many of which are similar.

I'm not looking to find a prehistoric animal, only to try and identify what was the strangest thing I'll ever see. Even now I can remember every minute detail of it. To see such a thing was awesome.

The Gambian sea serpent, based upon original sketches by Owen Burnham. (Dr Karl P.N. Shuker/Fortean Picture Library)

Presented with such an amount of morphological detail, quite a few identities can be examined and discounted straight away, beginning with *Tasmacetus shepherdi*. Although somewhat dolphin-like in shape, this is a primitive species of beaked whale, described by science as recently as 1937, and known from only a handful of specimens, mainly recorded in New Zealand and Australian waters, but also reported from South Africa. Whereas all other beaked whales possess no more than four teeth (some only have two), *Tasmacetus* has 80, and its jaws are fairly long and slender.

However, the Gambian beast's two pairs of well-developed limbs effectively rule out all modern-day cetaceans as plausible contenders, because these species lack hind limbs. They also eliminate the archaeocetes – even *Ambulocetus*. For although this 'walking whale' did have two well-formed pairs of limbs, unlike the Gambian sea serpent its teeth were only half as many in number, yet of more than one type. Its long tail and dentition effectively ruled out pinnipeds and sirenians from contention too.

Many 'sea monster' carcasses have proved, upon close inspection, to be nothing more exciting than badly-decomposed sharks, but as the Gambian beast displayed no notable degree of external decomposition this 'pseudoplesiosaur' identity was another non-starter. Indeed, after studying his detailed letters and sketches, it became clear that, incredibly, the only beasts bearing any close similarity to Burnham's Gambian sea serpent were two groups of marine reptilians that officially became extinct over 60 million years ago.

One of these comprised the pliosaurs – thus including among their number the mighty Australian *Kronosaurus* that Burnham himself had mentioned – but, whereas their nostrils' external openings had migrated back to a position just in front of their eyes, those of the Gambian sea serpent were still at the tip of its snout.

The other is the thalattosuchians – always in contention here on account of their slender, non-scaly bodies, paddle-like limbs, and terminally sited external nostrils. True, their tails possessed a dorsal fin, but a thalattosuchian whose fin had somehow been torn off or scuffed away would bear an amazingly close resemblance to the beast depicted in Burnham's sketches. Alternatively, assuming that a thalattosuchian lineage had indeed persisted into the present day, its members may no longer possess such a fin anyway.

Without any physical remains of the beast available for direct examination, however, its identity can never be categorically confirmed. Nevertheless, this compelling incident provides thought-provoking evidence for believing that not all of the giant reptiles of prehistory perished alongside the dinosaurs at the end of the Cretaceous Period.

Titanic turtles

The final category of water monster that seemingly involves a prehistoric survivor of reptilian identity features those of a characteristically chelonian nature.

According to the fossil record, the largest sea turtle of all time was *Archelon ischyros*, from North America's late Cretaceous, measuring 12 ft long, and with a 25 ft circumference. Unlike most modern-day turtles, however, it lacked a thick, horny shell. Instead, it had merely a framework of transverse struts, constructed from the bony ribs sprouting from its backbone and probably encased in a rubbery skin like that of today's leathery turtle.

Is the leathery turtle really the largest species of turtle alive today? (Hugh Evans)

The leathery turtle, up to 9 ft long, is the largest turtle officially in existence today, but there are reports on file of turtle-like beasts so enormous that some cryptozoologists consider it possible that the oceans conceal a modern-day descendant of *Archelon* – one, moreover, that has re-evolved a shell and has become even bigger than *Archelon* itself!

Certainly, stories of gigantic turtles are common in many mythologies around the world, but mythology can hardly explain accounts such as these. On 30 March 1883, for example, while on Newfoundland's Grand Bank, Captain Augustus G. Hall and the crew of the schooner *Annie L. Hall* reportedly encountered a turtle so immense that at first they mistook it for a capsized ship, floating upside-down. When the schooner approached to within 25 ft, however, enabling them to obtain a closer look at it and also to gauge its size against their vessel's length, they found it to be a living turtle – at least 40 ft long, 30 ft wide, and 30 ft from the apex of its back to the bottom of its undershell (plastron), with 20 ft flippers.

During June 1956, in the vicinity of Nova Scotia (not far from Newfoundland), some of the crew aboard the cargo steamer *Rhapsody* claimed to have seen a gigantic turtle roughly 45 ft long, with 15 ft flippers, and made even more distinctive by its totally white shell.

Reports of turtle-like water monsters are not confined to Canada either. Some have emanated from the Indian Ocean, including the vicinity of Sri Lanka. In the third century AD, Aelian mentioned the presence of immense turtles in the Indian Ocean whose shells were so large (up to 24 ft long) that they were used by the local people as roofing material! And huge female turtles up to 30 ft long were reported west of Sri Lanka in 1154 by El Edrisi.

Unrecognized descendants of the mighty *Archelon*? If some of that novel roofing material is still in existence, we may yet find out.

Silver coelacanths and souvenir scales – a marine mystery from Mexico

The discovery in 1938 of a living species of coelacanth off South Africa and later in the sea around the Comoro Islands near Madagascar is one of the greatest zoological events of the twentieth century, but there is some fascinating evidence to hand to suggest that history may at a later date repeat itself elsewhere around the globe.

One day in 1949, ichthyologist Dr Isaac Ginsburg at the US National Museum received a short note from a souvenir seller in Tampa, Florida, enclosing with it a single fish scale for him to identify. She regularly purchased barrels of scales from fishermen, and used them in the manufacture of her souvenirs, but the scales in one of the barrels that she had recently obtained were very strange and unfamiliar in appearance – unusually thick and hard, like plates of armour. Hence she was curious to learn more about the species from which they had originated. So too was Ginsburg once he had examined the scale that she had sent to him – because he could see that it greatly resembled those of the modern-day coelacanth!

Yet *Latimeria* had never been reported from the New World. Consequently, Ginsburg wrote back to the souvenir seller without delay, requesting more of the scales and further details regarding their origin – but he never received a reply. Equally tragically, the single scale was somehow lost, and has never been traced.

This episode set the scene for what has become one of the most fascinating, and still incomplete, detective stories in the history of prehistoric survival

– could there be an undiscovered species of living coelacanth in the American seas?

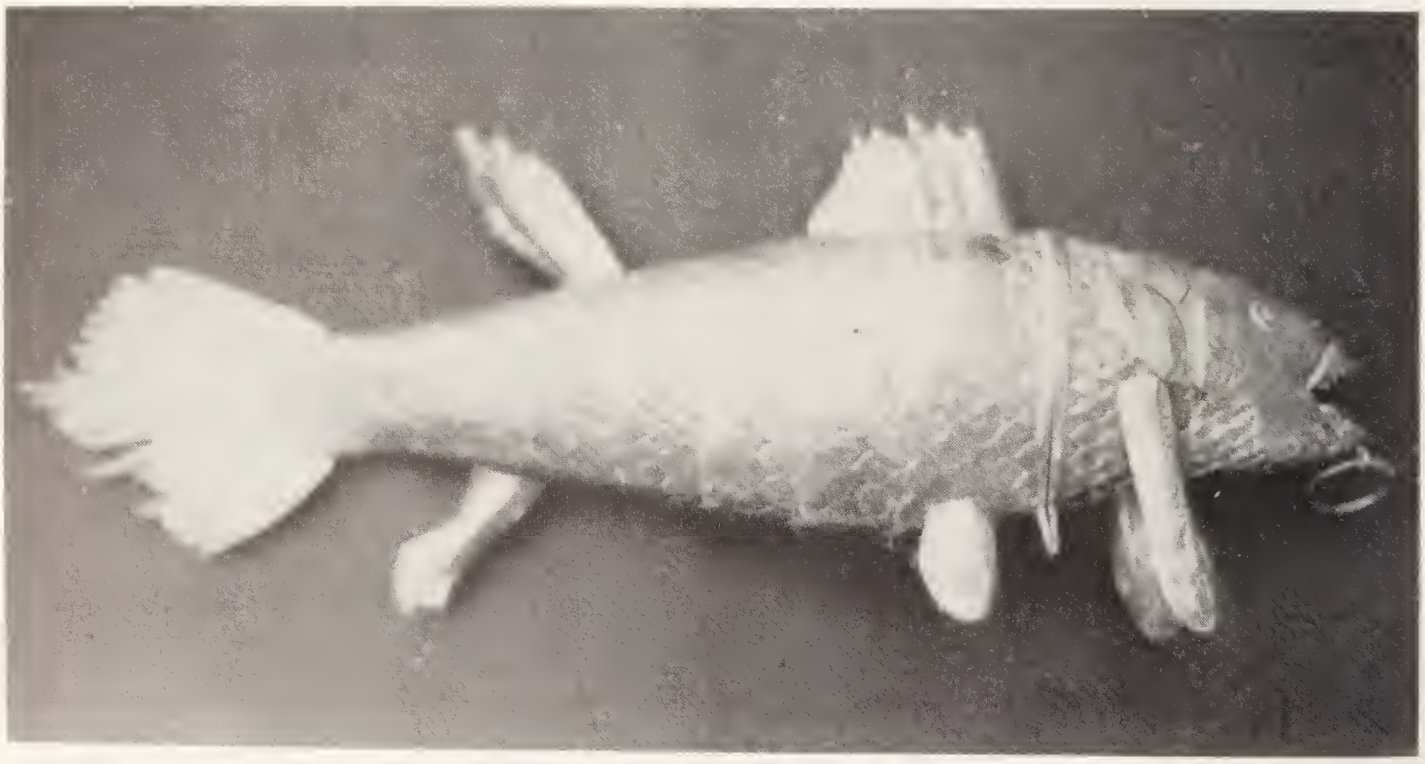
The next chapter in the story occurred in 1964, when Dr Ladislao Reti, an Argentinian chemist, noticed (and later purchased) a very beautiful but most unusual silver ornament hanging in a village church near Bilbao, on Spain's northern Atlantic coast. Measuring 4 in long, it was a meticulously sculpted statuette of a fish – but of no ordinary species.

Its scales were thick and armour-like, and its first dorsal fin was rayed – but its second dorsal fin, its pectorals, and its pelvics were all borne upon fleshy lobes, resembling stumpy legs. As for its tail, it bore three fins, the third of which was a tiny lobe sandwiched between the larger upper and lower lobes. There is only one species of fish alive today that possesses all of these features – indeed, the lobed fins and tripartite tail are wholly unique to it – and that is *Latimeria chalumnae*. Indeed, when viewed *in toto*, the silver *objet d'art* was instantly identifiable as an accurate three-dimensional image of a coelacanth – but how could its presence in a tiny Spanish church be explained? It had apparently been made during the seventeenth or eighteenth century, whereas *Latimeria* was not discovered by science until 1938.

To make matters even more mystifying, in 1965 a second silver ornament in the form of a coelacanth was found, of similar age to the first, and spotted this time by Maurice Steinert, then a molecular biology student, while browsing through an antiques shop in Toledo.

Since the discovery of the silver coelacanths, several solutions have been proposed. Perhaps they were based not upon the living *Latimeria*, but upon fossil coelacanths from the ancient past. Yet if this were true, how can we explain these ornaments' uncannily accurate three-dimensional form? It is hardly likely that their sculptor(s) could have achieved such precise results using only flat fossils as models. Alternatively, it may indicate that specimens of *Latimeria* had been brought to the Atlantic region before the species' scientific discovery – or even that there was a population inhabiting the Atlantic at that time.

More recently, however, a much more plausible explanation has been formulated, which links these remarkable statuettes with the strange scale from Tampa. Coelacanth researcher Professor Hans Fricke, from Germany's Max Planck Institute For Animal Behaviour, was very intrigued by the silver coelacanths, and while investigating their possible origin he consulted a silver art expert from Madrid called



The silver coelacanth sculpture discovered in a church near Bilbao in 1964. (The International Society of Cryptozoology)

Professor Valdavinus, who opined that the statuettes had probably been manufactured in Mexico, but while under Spanish colonial rule, thereby explaining their eventual presence in Spain. Their Mexican origin was later confirmed by metallographic and chemical analyses of their silver's impurities. Is it just a coincidence that the coelacanth-like scales had originated from fishermen at Tampa, in the Gulf of Mexico?

Furthermore, during the early 1970s American naturalist Sterling Lanier was selling some of his famous brass figurines of fossil animals at an art show near Florida's Gulf of Mexico coast, when he noticed a very interesting necklace among the exhibits of a fellow artist. The necklace was composed of fish scales, and what had caught his attention was the fact that they looked very like those of *Latimeria*. According to its owner, he had extracted the scales from a pile of marine miscellany – seaweed, shrimps, and so on – aboard a Mexican Gulf shrimp boat, and although he permitted Lanier to examine and even sketch the scales (sadly, Lanier has since lost his sketches) he would not sell the necklace.

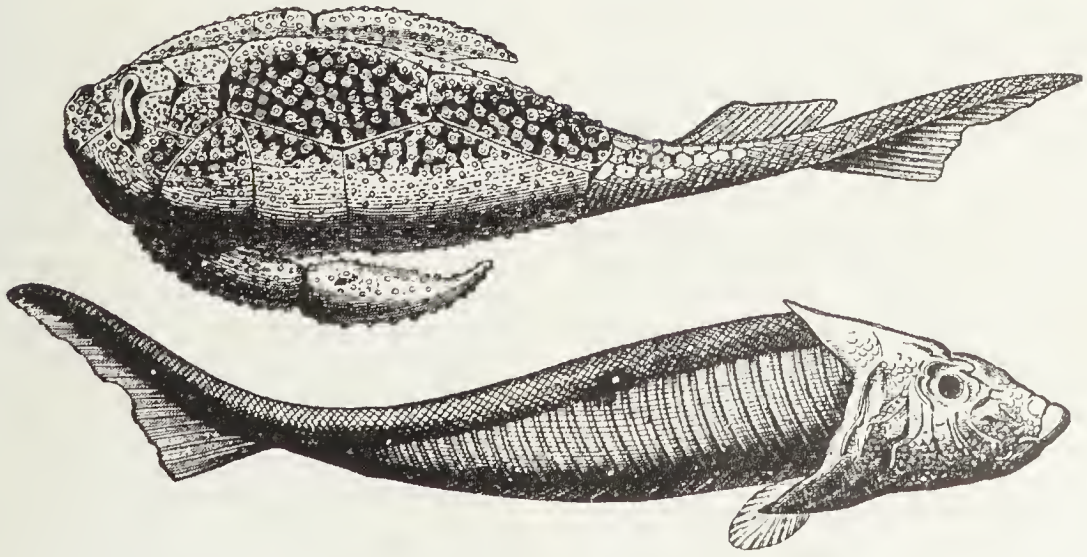
Faced with this array of independently obtained evidence, cryptozoologists are cautiously optimistic that the Gulf of Mexico is indeed home to an undiscovered species of living coelacanth. If so, it is currently known only from a couple of antique statuettes and a handful of lost scales. But who knows what tomorrow's shrimp boats and barrels may contain?

What may (or may not) be a noteworthy sequel to this tale occurred in 1992, when French naturalist Ronald Heu purchased three unusual fish scales in a souvenir shop at Biloxi, Mississippi. He felt that they were very like those of *Latimeria*, and sought the opinion of an ichthyologist colleague, who agreed that they were certainly similar in appearance. In the opinion, however, of a semi-anonymous correspondent from Châteaudun, as published in the French journal *Science et Vie* (October 1993), the scales were actually from a very large, known species of fish called the arapaima or pirarucu *Arapaima gigas*.

One final morsel of mystery regarding controversial coelacanths stems from an Indian miniature painting dating from the eighteenth century, which depicts a Moslem holy man standing beside a large fish. In a *Naturwissenschaftliche Rundschau* article from 1972, Berlin scientist Professor B. Brentjes contemplated the possibility that the fish – with large fins and armour-like scales – was a specimen of *Latimeria*. After examining the miniature as reproduced in his article, however, I can see very little similarity between the two fishes – and when I showed the reproduced picture to French ichthyologist Dr François de Sarre, he discounted a coelacanth identity in favour of the Indian climbing perch *Anabas testudineus*.

A pair of placoderms Down Under?

Among the most bizarre of all fishes – comprising a taxonomic class all to themselves – were the plated fishes or placoderms. Reaching their peak of evolutionary development during the Devonian Period, but extinct by the close of the Carboniferous (285 million years ago), they were characterized by



Two fossil placoderms: Pterichthyodes *(above) and* Cephalaspis *(below).*

bony plates encasing their head and the anterior portion of their body. In 1986, renowned wildlife writer David Alderton cautiously investigated (but ultimately rejected) a living placoderm as an identity for two particularly curious and controversial sea monsters.

One of these was the 70–80-ft-long, horizontally sinuous, tadpole-shaped creature that French photographer–traveller Robert le Serrec allegedly spied lying in shallow water on 12 December 1964, near Hook Island in Australia's Great Barrier Reef. According to le Serrec, it had a deep wound in one flank, and its quiescent nature enabled him to take some photos before it suddenly raised its head upwards. Not surprisingly, le Serrec fled in his boat, and when he returned later that day the animal had gone.

Most authorities have dismissed his monster and photos as a hoax, though Ivan Sanderson speculated that it might be an undiscovered, giant species of synbranchid or swamp eel. Alderton noted that its tapering body corresponded quite closely in shape with the placoderm *Cephalaspis*, but the photos contain no indication of body plates. Also, even the mightiest of placoderms, the 11-ft-long *Titanichthys*, falls far short of le Serrec's 70 ft monster.

The other putative placoderm was also reported from the Great Barrier Reef, surfacing in a *Land and Water* letter on 3 January 1891 by schoolteacher Miss S. Lovell who claimed to have sighted it recently at Sandy Cape. Terming it the *moha-moha* (supposedly its aboriginal name), she likened it to 'a monster turtle fish'. In a sketch, she depicted an incongruous composite that sported a snake's head and neck, a turtle's carapace, and a fish's tail fin.

After examining and discounting placoderms, modern fishes, and turtles as plausible identities, Heuvelmans discounted the *moha-moha* itself, as a zoological impossibility. Alderton also examined a placoderm identity, commenting that in *Pterichthyodes*, the forebody plates yielded a turtle-like shelled appearance, and its naked hind body resembled a typical fish's. It did not, however, have an elongate snake-like neck (no fish does).

As Alderton also noted, giant modern-day placoderms are unlikely to escape scientific detection in an area so frequented by divers and fishermen as the Great Barrier Reef.

The jaws of megalodon – shark of nightmare . . . and reality?

The following lines were penned by Victorian naturalist Philip H. Gosse, and appeared in his book, *The Romance of Natural History* (1860):

> Half concealed beneath the bony brow, the little green eye gleams with so peculiar an expression of hatred, such a concentration of fiendish malice, of quiet, calm, settled villany, that no other countenance that I have ever seen at all resembles. Though I have seen many a shark, I could never look at that eye without feeling my flesh creep, as it were, on my bones.

This graphic description vividly expresses the feelings of many people when confronted with sharks, especially the most feared species of all, *Carcharodon carcharias*, the great white shark. The world's largest living species of carnivorous fish (excluding plankton-eaters), it is known to attain a total length of up to 26 ft, but unconfirmed sightings of far bigger specimens have occasionally been recorded. Could such sharks really exist – and, if they do, could they prove to be something even more terrifying than oversized great whites?

In his *Sharks and Rays of Australian Seas* (1964), Antipodean ichthyologist Dr David G. Stead documented an astonishing account that had been narrated to him back in 1918 by some fishermen at Port Stephens, New South Wales. They claimed that their heavily weighted crayfish pots, each measuring 3½ ft long, had been effortlessly towed away by a ghostly white shark of such enormous size that they estimated its total length at 115–300 ft!

Surprise and shock at unexpectedly encountering an awesome Moby Dick of the shark world may well have helped to distort their assessment; but even if we allow a very generous margin of exaggeration, the result is still a creature of far greater size than one would expect for the great white shark.

An immense shark, sporting a square head, huge pectoral fins, a green or yellow body speckled with a few white spots (encrusted barnacles?), and measuring considerably more in total length than his 35–40-ft boat was spied in 1927 or 1928 by Zane Grey, a famous writer of western novels who was also a passionate angler, while sailing off the French Polynesian island of Rangiroa in the South Pacific's Tuamotu Archipelago. Yet despite his experience in handling fishes of record-breaking size, he was unable to identify this monstrous specimen.

In 1933, when about 100 miles northwest of Rangiroa aboard the SS *Manganui*, Grey's son, Loren, also caught sight of a gigantic shark, once again yellowish in colour but flecked with white, which revealed a great brown tail, plus a massive

head that seemed to be at least 10–12 ft across, and a total body length estimated by Grey junior to be not less than 40–50 ft. He was convinced that the creature was not a whale shark *Rhincodon typus*, a harmless planktivorous species and the world's largest fish of any type with a maximum confirmed length of 41½ ft (but likely to attain up to 50 ft). So what was it?

According to traditional beliefs of the Polynesian fishermen who work along the coasts of New South Wales, these waters are frequented by a frightening type of sea creature, which they respectfully refer to as the Lord of the Deep. They liken it to a gigantic white shark, measuring about 100 ft in length. Is this what the Greys spied, and could this be what carried away the pots of the lobster fishermen in 1918?

Whereas many ichthyologists are willing to consider the possibility that there are larger specimens of great white shark in existence than have so far been verified by science, some are far bolder. For them, the explanation for the Lord of the Deep is much more spectacular – a terrifying prehistoric resurrection, featuring a living leviathan from the ancient waters.

The great white shark once had an even bigger close relative – the megalodon shark, *C. megalodon* ('big tooth'). Named after its huge teeth, which were triangular in shape, sometimes exceeding 4 in long, and edged with sharp serrations, the megalodon was once believed to measure a colossal 80 ft long, but this early estimate of its size was later shown to be incorrect, and was refined to a more sedate yet no less unnerving 43 ft. However, after some extra-large megalodon teeth, some measuring almost 6 in long, were unearthed a while ago at the aptly dubbed Sharktooth Hill near Bakersfield, California, ichthyologists conceded that some specimens might have attained a total length of up to 55 ft.

Another significant revision concerned the date of this species' extinction. Palaeontologists had traditionally believed that the megalodon had died out at least one million years ago, but this was drastically reduced following a dramatic revelation at the close of the 1950s. Back in 1875, the British oceanographic survey vessel *Challenger* had hauled up two megalodon teeth from the manganese dioxide-rich red clay deposit at a depth of 14,000 ft on the sea bed. When, in 1959, these teeth were dated by Russian scientist Dr W. Tschernezky, the scientific world received a considerable shock. Knowing the rate of formation of the manganese dioxide layer covering them, Tschernezky had measured the thickness of the layer and, from the results that he had obtained, he was able to announce that one of the teeth was only 24,000 years old, and the other was no more than 11,000 years old. In short, the megalodon shark was still alive around the end of the Pleistocene epoch – which in turn lends credibility to speculation that this incredible species may still be alive today.

Dr David Stead considered that the shark responsible for towing away the fishermen's lobster pots could have been a living megalodon, and even sceptics of such a theory confess that they can suggest no iron-clad reason why this species should have died out. Even its huge food requirements could readily be met if, like the sperm whale, it dined upon giant squid – seemingly an abundant species in the ocean's stygian depths. And if it were primarily a denizen of the deep, only occasionally entering the ocean's surface waters, this would explain how it had succeeded in eluding science and why even fishermen in its general area of distribution rarely catch sight of it.

There is a notable, recent precedent here. In November 1976, a major new species of very large shark was accidentally captured by a research vessel anchored off the Hawaiian island of Oahu. Attempting to swallow one of the ship's anchors it had choked to death, despite its enormous mouth, which swiftly earned its species a very appropriate name – the megamouth shark. Even though it measures up to 17 ft (and possibly more), only seven specimens had been recorded by 1995, but we now know that this species undergoes vertical migration – staying in the depths of the sea during the day, and rising to the surface only at night, which explains how it had managed to evade scientific detection until so late a date as 1976.

Bearing in mind, therefore, that a mere 20 years ago the megamouth was still unseen and undiscovered, the prospect for prehistoric persistence of the megalodon cannot be denied out of hand – however much we may wish to banish from our minds the image of a rapacious, flesh-eating shark twice the size of the modern world's current record-holder lazily cruising the oceans of the twentieth century.

In search of sea scorpions and sea millipedes

On 11 March 1959, diver Bob Wall was 35 ft below the surface of the sea off Florida's Miami Beach when he noticed a large underwater cave and peeked inside to see if it contained anything of interest. What it did contain was an alarming creature with a cylindrical 5½-ft-long body, raised 3 ft off the ground upon eight hairy legs, and a pointed head whose stalked, dollar-sized eyes were looking directly at him. Indeed, as the diver gazed at it this startling apparition began to move towards him – at

which point Wall decided that he had seen more than enough, and swam swiftly away. Nicknamed 'Specs' by the media, the next day it was sought by five divers from the Miami seaquarium, but declined to reappear, and has not been reported since.

Just over a year later, an even more unexpected water monster made its media debut from the bottom of Dan Craig's 12-ft-deep well on his Indiana farm, situated 4 miles south of Lynn, Randolph County. In an interview published by the *Indianapolis News* for 8 June 1960, Craig revealed that he had known about his well's bizarre inhabitant for about a year, and described it as '. . . an eerie beast with a dome-shaped head, two bulbous eyes, and eight flailing tentacles as long as a man's arm'. According to his wife, who had also seen it, the creature resembled a mushroom as large as a plate, with long legs and feet.

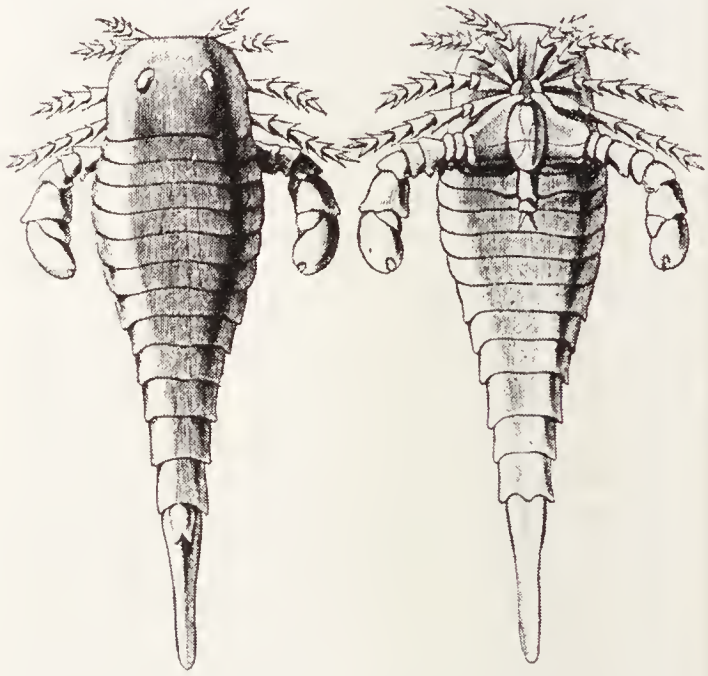
Out of continuing curiosity Craig decided to drain the well, and left behind only about 4 in of water at the bottom. Following this, an intrepid 12-year-old youth called Craig Lee, risking life and limb on a ladder, climbed down into its shadowy depths in search of its mysterious occupant. When he clambered back out, Lee claimed that he had spied something amid the debris on the well's gloomy bottom that was indeed the size of a plate, and looked like a greyish-yellow sponge mushroom with eyes on the top of its head, and with eight or ten legs as long as his own arm but with pincers on the ends.

It might well be mere coincidence, but just a few days later a Randolph County conservation officer called Kenneth Yost hauled up out of the well a flesh-coloured ball of sponge rubber and a segment of garden hose, and the beast itself was never seen again.

On 30 January 1959, at Covington, Kentucky, a grey octopus-like creature with ugly tentacles, rolls of fat surrounding a bald head, and a lopsided chest allegedly surfaced in the Licking River, and emerged on to the bank. Further back, on Christmas Eve 1933, a reputed 'octopus' (according to media accounts) was actually captured alive by two fishermen – Robert Trice and R.M. Saunders – after its tentacles appeared over the side of their rowing boat in the Kanawha River near Charleston, West Virginia. When the body was brought ashore, it was found to measure 3 ft long from its head to the end of the longest tentacle.

Two very odd types of water monster have also been reported from certain mountain lakes in Argentina and Chile. One type is generally likened to a featureless expanse of cowhide. The other is serpentine with a claw-pointed tail; some descriptions claim that it has tentacles ending in hooves. Both forms are said to kill humans, dragging them beneath the surface of their watery domains and squeezing them to death.

Unlike the water monsters documented earlier in this chapter, all of those reported here seem more likely to be invertebrates than vertebrates. In the revised edition of his absorbing book *Natural Mysteries* (1991), however, mystery beast chronicler Mark A. Hall from Minnesota offers a more specific identity. He proposes that they are unrecognized modern-day descendants of one of the most extraordinary groups of prehistoric creatures known from the fossil record – the sea scorpions.



A couple of extinct sea scorpions or eurypterids.

Referred to scientifically as eurypterids, the sea scorpions comprise a long-extinct group of arthropods – that incomparably diverse assemblage of invertebrates united morphologically by their jointed limbs. They were among the largest and most spectacular of all arthropods, attaining a total length of 10 ft in one species, and were only distantly related to modern-day scorpions – being much more closely allied to the horseshoe crabs. They had reached their zenith of evolutionary development by the late Silurian Period (around 400 million years ago) and had disappeared entirely from the fossil record by the close of the Permian (approximately 155 million years later).

Most sea scorpions were elongate, with a broad prosoma (the combined head and thorax) whose

rounded head sported a distinctive pair of laterally sited compound eyes and elongated mouth, and whose short thorax bore six pairs of limbs. One pair, the chelicerae, were jaw-parts (which attained an exceptional degree of development in *Pterygotus* species, resembling pincer-like grasping organs); the others were true legs.

Of these, the most posterior pair were much larger and flatter than the rest, terminating in oval plates or paddles – undoubtedly forming the principal swimming organs, but possibly serving as anchors too, or as scoops for digging up mud on the sea bottom where these creatures may have rested or hidden themselves. These limbs earned the sea scorpions their scientific name – 'eurypterid' translates as 'broad wing', alluding to the wide paddles.

The abdomen or opisthosoma was divided into two morphologically distinct sections. The forepart was known as the mesosoma, and consisted of seven squat segments. The posterior part or metasoma comprised five tapering cylindrical segments, the last of which bifurcated into two lobes – between which, concluding the sea scorpion's morphological roll-call, arose a long pointed spine (or, in some species, a short flat plate) called the telson.

During their evolution, the sea scorpions adapted to living in brackish waters, and eventually penetrated freshwater too – a boon to mystery beast investigators seeking to link them to water monsters from a wide range of habitats. Indeed, based upon some exceptional eurypterid fossils unearthed during the 1980s at East Kirkton in West Lothian, Scotland, palaeontologists now believe that certain sea scorpions might even have been terrestrial. If their lineage has persisted into the present day, 245 million years of intervening evolution could have engineered many other modifications too, yielding creatures quite different in appearance and lifestyle to their Permian predecessors.

Having said that, however, I am unable to share Hall's opinion – that all of the water monsters reported here are evolved eurypterids – for a number of fundamental reasons. To begin with: even allowing for over 200 million years of evolution, these monsters are far too diverse in form to belong to the same taxonomic group – especially an arthropod group. Even the most specialized eurypterid would surely be hard-pressed to resemble a piece of cow-hide, or an octopus with flailing tentacles (far-removed indeed from the jointed limbs that are the diagnostic feature of all arthropods).

Chile's traditions of hide-like water monsters also extend to its coastal waters. According to Jorge Luis Borges's revised *The Book of Imaginary Beings* (1974), the marine counterpart is a mysterious type of octopus that resembles an outstretched ox hide, with countless eyes all around its perimeter and four larger ones in the centre of the body. However, as I recently pointed out (*Fate*, March 1994), this description scarcely recalls an octopus, but it is more than a little reminiscent of some jellyfishes, whose bell is ringed by numerous eye-like sensory organs called rhopalia, and which also have four deceptively eye-like organs visible in the centre of their bell (they are actually portions of the gut, called gastric pouches).

True jellyfishes (scyphozoans) are exclusively marine, so even if that identity explains the latter beast it is unlikely to be involved with the lake version. This might simply be a myth – inspired by reports of the real, marine creature, and utilized as a convenient 'bug-bear' by mothers to scare their children away from deep lakes where they could easily drown.

The second type of Chilean lake monster, with slender body, tentacles, and claw-bearing tail, sounds a little more realistic – but little like a eurypterid. True, its tail recalls the pointed telson of some sea scorpions, but these animals never possessed limbs that could be remotely described as tentacles with hooves, and although their body was slender it was never used to squeeze their prey to death. Whether non-existent myth or corporeal monster, we need not dwell further upon its candidature as a eurypterid (evolved or otherwise).

As for the 'living octopuses', once again I doubt very much that these are in any way related to eurypterids. They seem much more like genuine octopuses – despite the fact that such animals are not supposed to be freshwater fauna. Cephalopods (which include octopuses and squids) are traditionally thought of as being exclusively marine – but there are a handful of well-attested exceptions to this rule. The most famous of these is from 1902, and features the squids of Lake Onondaga, New York.

As reported by *Science* (12 December 1902), a Syracuse fisherman called Mr Terry had netted a strange creature in the lake – when it was shown to science teacher Professor John D. Wilson, he identified it as a squid. A second specimen was caught shortly afterwards in the same portion of the lake by a local restaurant owner called Lang. Interestingly, the area of the lake in which the squids were found is just where the first salt springs were discovered and the first salt made in the Syracuse region by the early settlers long before salt wells were bored, so perhaps the water is sufficiently saline after all to

sustain ostensibly marine beasts of this nature – which could have first reached the lake during the period in North America's post-glacial history when the lake was connected to the sea through the St Lawrence Valley. So perhaps the 'living octopuses' should be treated more seriously. Even the way in which the Kanawha River specimen was measured – from its head to the end of a tentacle – is precisely the method one would use to ascertain the size of an octopus.

The animated 'sponge mushroom' – even if it really was more than a misidentified blob of sponge rubber – hardly brings to mind images of armoured eurypterids. Only *Pterygotus* had pincers, and even these were limited to a single pair, utilized for grasping prey. Pincers would have served no useful purpose on the remaining limbs, which functioned as true legs, not as jaw-parts. If it really did exist, it sounds more like a flattened, crab-like crustacean than a eurypterid – perhaps one of the freshwater crayfishes.

Crustaceans also come readily to mind when considering 'Specs'. The compound eyes of eurypterids, although large and noticeable, were never elevated on stalks. Yet this is a common feature among crustaceans. Their heads were round, not pointed (like those of many large crustaceans); their bodies were flattened, not cylindrical (like many large crustaceans again); and when standing or walking they probably held their elongate metasoma and telson curved upwards and forwards above their mesosoma and prosoma, like true scorpions – surely a very striking, memorable sight, yet one that was not mentioned by Wall.

Of course, an evolved eurypterid might display some (or all) of those features, and may no longer hold its metasoma in scorpionesque pose. However, it would also need to have lost its paddled swimming limbs, if it were to match the eight-legged body format of 'Specs'. This is hardly likely, as these limbs were the eurypterids' principal organs of propulsion. In my opinion, Specs is more than adequately reminiscent of a large crustacean. An extra-large specimen of one of the American spiny lobsters *Panilurus*, which are fond of inhabiting large holes and crevices underwater, would yield a convincingly close match.

Contemplating the con rit

Another mystery beast that has been linked to the concept of surviving eurypterids is the so-called 'sea millipede'. In 1883, the headless, putrefying carcass of a remarkable, armour-plated sea monster was found washed ashore at Hongay in Vietnam's Along Bay. It was observed by several local Annamites, including an 18-year-old youth called Tran Van Con, who actually touched the body. Thirty-eight years later, he recalled this incident to Dr A. Krempf, Director of Indochina's Oceanographic and Fisheries Service.

The carcass was 60 ft long and 3 ft wide, and was composed of numerous identical segments – so hard in texture that they rang like sheet metal when one of the locals hit them with a stick. Each segment was dark-brown dorsally, light-yellow ventrally, measured 2 ft long and 3 ft wide, and bore a pair of 2 ft 4 in lateral spines. The terminal segment bore two additional spines, directed backwards like a pair of spiny tails. The stench from the decomposing carcass was so intense that the locals soon towed it out to sea where it sank, and they referred to the creature itself as *con rit* – 'millipede'.

When contemplating this animal's possible identity in his book *In the Wake of the Sea-Serpents* (1968), Heuvelmans briefly considered and rejected the sea scorpions as a candidate, together with crustaceans – favouring instead a hypothetical, highly specialized form of evolved armoured archaeocete, which he dubbed *Cetioscolopendra aeliani* ('Aelian's centipede whale'), the many-finned sea serpent. A number of sightings are on file describing elongate sea monsters seemingly bearing numerous lateral fins or projections, which the ancient writer Aelian referred to as marine centipedes. I agree entirely with Heuvelmans that the *con rit* is unrelated to the sea scorpions, but I also have grave doubts that it is an archaeocete.

As already noted, the concept of armoured archaeocetes is no longer in favour; and in any case, even within his own selection of 'many-fins' Heuvelmans includes examples that simply cannot be mammalian. The most prominent of these is the 150-ft-long monster spied for about 30 minutes by a number of sailors on deck aboard HMS *Narcissus* on 21 May 1899, after the ship had rounded Algeria's Cape Falcon. In an interview concerning their sighting, a signal man made the following telling statement:

> The monster seemed to be propelled by an immense number of fins. You could see the fins propelling it along at about the same rate as the ship was going. The fins were on both sides, and appeared to be turning over and over. There were fins right down to the tail. Another curious thing was that it spouted up water like a whale, only the spouts were very small and came from various parts of the body.

Unless the numerous fins are in reality a pair of

undulating lateral membranes extending the entire length of the creature's body – which does not seem likely from the above description – then the *Narcissus* sea serpent is neither a mammal nor any other form of vertebrate. Clearly, its fins were locomotory organs (creating by their propulsive movements the spouts of water noted by the signal man), not rigid spines like those reported from the carcass of the *con rit*. Consequently, my own feeling is that, in life, each pair of the *con rit*'s spines had sheltered a pair of soft-bodied limbs beneath – but which, together with the remainder of this beast's soft tissues, had rotted away during decomposition, leaving behind only the hard dorsal cuticle. All of which is totally in accord with what one would expect from a crustacean: multiple locomotory limbs, hard dorsal armour that does not rot once the creature has died, and a soft body that very rapidly (and odiferously!) rots upon death.

The only major problem is the *con rit*'s immense length – far beyond anything recorded so far by science from a known modern-day (or fossil) crustacean. It is well known that the spiracular system of respiration utilized by insects (involving a vast internal ramification of minute breathing tubes) prevents them from attaining the gigantic proportions beloved by directors of science-fiction movies. However, crustaceans breathe via gills, and their bodies are buoyed by the surrounding water. Hence the evolution of a giant aquatic crustacean is not wholly beyond the realms of possibility and, to my mind, offers the only remotely feasible explanation to Vietnam's anomalous *con rit* or sea millipede.

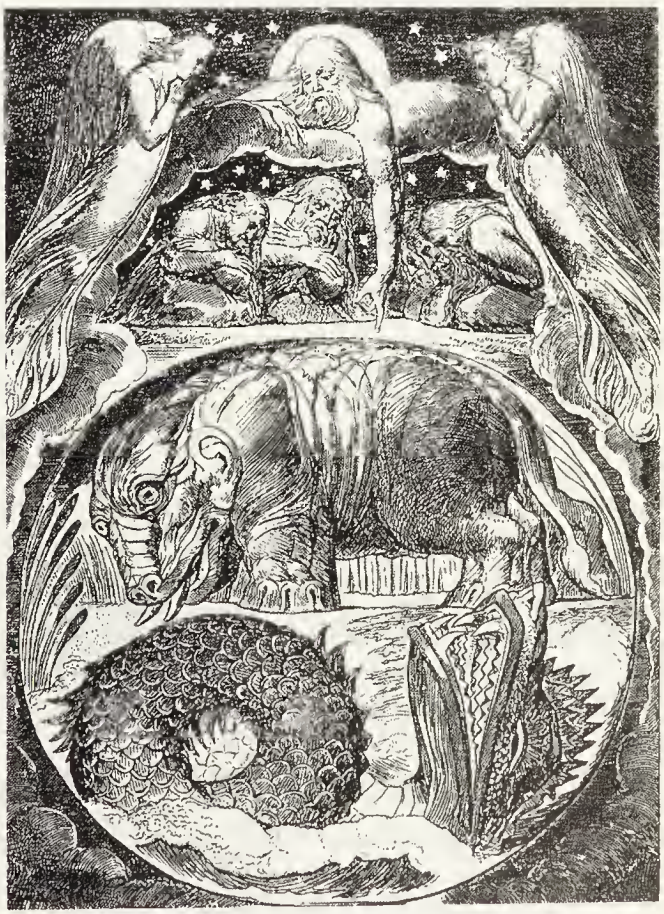
Many years ago, in a report describing a new 3-ft-long species of *Mixopterus* sea scorpion, Norwegian palaeontologist Professor Johan Kiaer recalled the thrill of its discovery:

> I shall never forget the moment when the first excellently preserved specimen of the new giant eurypterid was found. My workmen had lifted up a large slab, and when they turned it over, we suddenly saw the huge animal, with its marvelously shaped feet, stretched out in natural position. There was something so lifelike about it, gleaming darkly in the stone, that we almost expected to see it slowly rise from the bed where it had rested in peace for millions of years and crawl down to the lake that glittered close below us.

No doubt cryptozoologists share a similarly dramatic dream – to haul up a living eurypterid from the depths of the oceans or even from the muddy bottom of a large freshwater lake. And somewhere out there, perhaps there really are some post-Permian, present-day sea scorpions, indolently lurking in scientific anonymity. Based upon the evidence offered up so far, however, this prospect seems no more likely than the resurrection of Kiaer's fossilized specimen from its rocky bed of Silurian sandstone.

The *real* leviathan?

How could a chapter on water monsters close without a consideration of the real, original leviathan? This colossal mystery beast of the Bible – 'the piercing serpent . . . that crooked serpent . . . the dragon that is in the sea' (Isaiah, 27: 1) – is, after all, the creature whose name has ultimately become an umbrella term for large, unidentified water beasts everywhere, as evinced by Tim Dinsdale's classic book on this subject, *The Leviathans* (1966, 1976).



The biblical sea monster Leviathan (below) and mystery beast Behemoth (above), as portrayed by William Blake. (Fortean Picture Library)

The Old Testament contains four references to this monstrous sea creature, which provide several important morphological features – including its

huge size, extensively scaled body, elongate shape, large plentiful teeth, shining eyes, powerful neck, smoking nostrils, and distinctive fins. Biblical scholars have nominated several different animals as the leviathan's identity, but whereas each possesses some of its characteristics, none has all of them.

The most popular identity is the Nile crocodile, which is indeed scaly and somewhat elongate, with an abundance of large teeth, a powerful neck, shining eyes, and a sizeable (albeit not enormous) body. However, it possesses neither fins nor smoking nostrils, and is not marine in habitat. Sharks are marine and finned, some are very large and fairly elongate, and many have plenty of large teeth, but not smoking nostrils, shining eyes, or scales.

Whales are also marine, finned, often very large and quite streamlined, and some have many large teeth. Moreover, the spray spouted upwards from around their blow-holes when they exhale could conceivably be distorted into smoke during the telling and retelling of leviathan reports over successive generations. But whales are neither scaly nor shiny-eyed, and their necks are almost invisible.

And so it goes on – even identities as unlikely as the rock python have been offered in a desperate attempt to reconcile this exceptional creature with a known type of animal. Most probably, the leviathan is a non-existent composite, part-myth and part-reality – displaying a hotchpotch of distinctive features drawn from all of the animals noted above, and possibly one other too, a bona fide sea serpent.

On account of its scaly skin, Heuvelmans considers the leviathan to be of the 'marine centipede' type (and thus, according to his belief in what these creatures are, a modern-day armoured archaeocete). Conversely, I believe that if the leviathan is either a sea serpent or a myth inspired in part by sightings of one, then it is more likely to be a living mosasaur.

Indeed, this identity uniquely combines *all* of the leviathan's features – its scaly body, elongate shape, shining eyes (typical of many large reptiles), powerful neck, fins, great size (as with the tylosaurs), large plentiful teeth, and smoking nostrils (as with the whale identity, no doubt a reference to the spouting of water displaced from around its nostrils when exhaling underwater). Yet only a complete specimen can conclusively test this hypothesis.

'Canst thou draw out leviathan with an hook?', Job is asked (Job, 41: 1). Judging from science's singular lack of success in securing the carcass of any type of genuine water monster by any of the traditional means used in capturing aquatic animals, the answer to this question would appear, quite definitely, to be no! Clearly, then, it is time to develop a different means of obtaining such evidence – one commensurate with the sophisticated technology now available for scientific research – for until such evidence *is* obtained, all of the leviathans documented in this chapter, and many others besides, will remain an abiding mystery.

In 1886, Charles Gould made the following remarks in his book *Mythical Monsters*:

> Let the relations of the sea-serpent be what they may; let it be serpent, saurian, or fish, or some form intermediate to them; and even granting that those relations may never be determined, or only at some very distant date; yet, nevertheless, the creature must now be removed from the regions of myth, and credited with having a real existence, and that its name includes not one only, but probably several very distinct gigantic species, allied more or less closely, and constructed to dwell in the depths of the ocean, and which only occasionally exhibit themselves to a fortune-favoured wonder-gazing crew.

It is a sad reflection of zoology's longstanding indifference to water monsters that Charles Gould's remarks are as relevant today as they were more than a century ago.

STOP PRESS

IN THE Japanese documentary of Lake Dakataua's *migo*, one section of footage, lasting roughly 5 minutes, portrayed what Professor Roy Mackal referred to as three portions of a very large, long, swimming animal.

The most anterior portion was an indistinct head, remaining above the water. Behind that was a smaller neck-like portion. Further back, but maintaining a constant distance from the 'neck', was a large, flattened hump. Oscillating vertically, it seemed to be actively propelling the 'head', 'neck', and whatever submerged body portion linked the hump and 'neck'.

When forwarded frame by frame, another section of footage revealed what appeared to be a portion of the *migo*'s body, bearing two dorsal spine-like projections, rapidly rising vertically above the water, then submerging again – followed immediately by the momentary vertical emergence of what may have been a tail, with two horizontal, whale-like flukes.

Lions With Pouches and Horses With Claws –

a Collection of Mammalian Methuselahs

> The Queensland Tiger has always seemed to me to need further scrutiny: those reported fangs are suggestive of a specialized carnivorous marsupial, such as *Thylacoleo* [the officially-extinct pouched lion], as indeed Shuker points out. But as the Tablelands and Daintree Rainforests get tamed and explored, yield up their last mammalogical secrets, and get invaded by feral cats, we may lose the chance to find out. When the last rainforests have been logged, overrun by tourists, or dissected into tiny fragments, perhaps we will find a *Thylacoleo* skull on the mantelpiece of an old-timer, who will recount how his dogs killed the creature when he was a boy; and he will smile his enigmatic smile, and we will never know.
>
> Professor Colin P. Groves, *Cryptozoology* (Vol. 11, 1992)

> Among a large collection of vertebrate fossils from the Lukeino Formation which I made recently I found the proximal phalanx of a large Chalicothere [an extinct horse-related ungulate with claws instead of hooves] . . . On discovery of the Lukeino fossil, I described a Chalicothere to my field assistant, Mr Kiptalam Chepboi, who assured me that I had accurately described a *Chemosit*. I repeated the description to several other local people, all of whom gave the same opinion. The *Chemosit* is an animal of Kalenjin myth, on which the 'Nandi Bear' is supposed to have been based.
>
> Martin Pickford, 'Another African Chalicothere' (*Nature*, 10 January 1975)

AT THE beginning of the Pleistocene epoch, two million years ago, a spectacularly rich, diverse mammalian fauna existed throughout the world, some of whose members attained dimensions far exceeding those of any representatives alive today – in what is termed the Holocene or Recent epoch. By the close of the Pleistocene 10,000 years ago, however, the vast majority of this megafauna had vanished. Traditionally, this was assumed to be a consequence of natural extinction, but in more recent times a very different explanation has been offered – overkill, i.e. the destruction of these mammals of magnitude not by nature, but by man.

Irrespective of the cause, however, the effect may not be as black as is officially painted, for, as will be revealed in this chapter, some of the most famous and outstanding members of the Pleistocene's fur-bearing megafauna may have avoided Holocene obscurity after all.

In search of the missing marsupials

Roughly 40 million years ago, Australia broke away from East Antarctica, and has remained isolated from all other land masses ever since. The first pouched mammals (marsupials) had already entered Australia prior to its separation, but the eutherian ('true') mammals – comprising virtually all the non-marsupialian mammals alive today – had not penetrated it in time. Consequently, except for some enterprising rodents that reached its shores many millennia ago and a few monotremes (egg-laying mammals) that had entered it before its separation, Australia's native mammals were exclusively marsupialian.

In the absence of competition from eutherians, the pouched clan underwent a dramatic evolutionary radiation, yielding species to fill every available ecological niche open to mammals. Moreover, because they were occupying niches filled elsewhere in the world by

eutherians, they even evolved into morphologically parallel forms. For example, wolves and dogs were represented in Australia by an extraordinarily dog-like marsupial called the thylacine, shrews were mirrored by tiny carnivorous marsupials inappropriately termed marsupial mice, 'flying' squirrels were faithfully duplicated by a group of marsupials called flying phalangers, anteaters by the marsupial numbat, ground squirrels by wombats, weasels by dasyures, tree squirrels and rats by possums, and so on.

Nevertheless, today's spectrum of marsupials seems to lack equivalents for certain major eutherian mammals elsewhere. There are no feline marsupials, no principally aquatic versions, no primate counterparts, and no representatives for the more burly, cumbersome, hoofed beasts such as rhinos or tapirs. Yet as recently (geologically speaking) as 10,000 years ago, such creatures did exist – and that is not all. As will be revealed, it is conceivable that these 'missing marsupials' may not be missing after all.

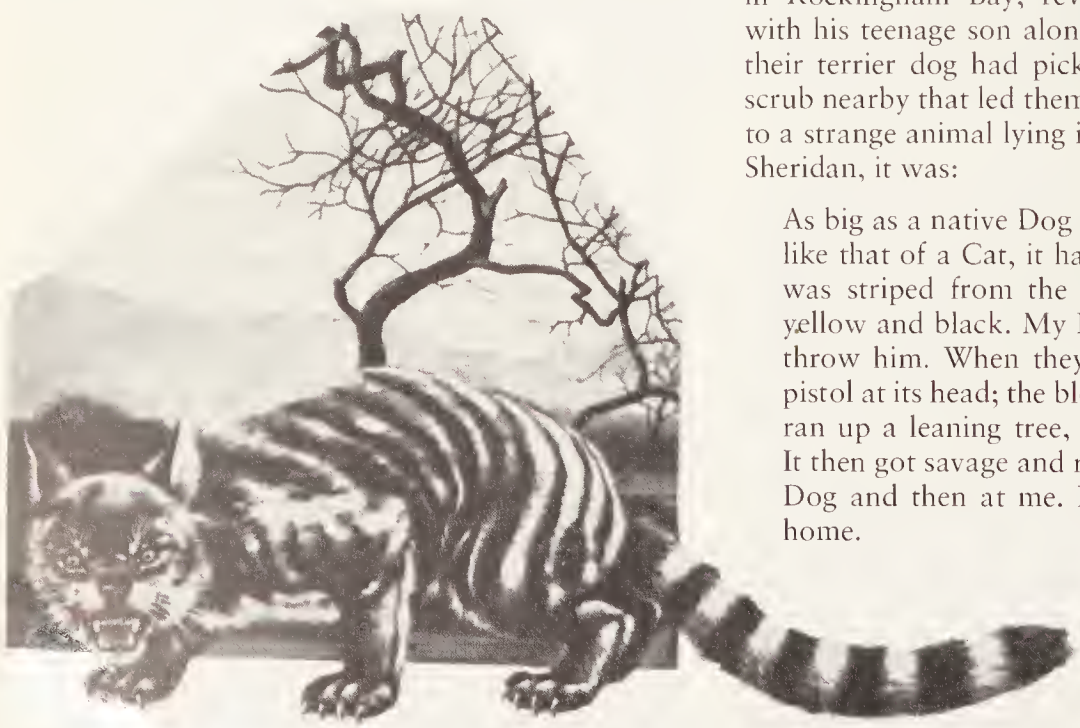
The yarri – *Queensland's mysterious marsupial tiger*

During the years 1880–84, Norwegian zoologist Carl Lumholtz spent his time in Australia, studying its unique fauna and flora, and for most of that period he lived with the aboriginals of north-eastern Queensland. As he later recounted in his book *Among Cannibals* (1889), the Herbert Vale natives spoke of two large mammals, that he believed to be unknown to science, inhabiting the summit of the Coast Mountains. He succeeded in discovering one of these, the *boongary*, which proved to be a hitherto undisclosed species of tree kangaroo – a group of marsupials previously known only from New Guinea – and was fittingly christened *Dendrolagus lumholtzi*. The other has remained undiscovered. Known to the aboriginals as the *yarri*, and described as cat-like, with stripes encircling its body, it was conceived by Lumholtz to be a marsupial tiger:

> It was said to be about the size of a dingo, though its legs were shorter and tail long, and it was described by the blacks as being very savage. If pursued it climbed up the trees, where the natives did not dare follow it, and by gestures they explained to me how at such times it would growl and bite their hands. Rocky retreats were its most favourite habitat, and its principal food was said to be a little brown variety of wallaby common in north Queensland scrubs.

By the time that Lumholtz was learning of the *yarri* from the Herbert Vale aboriginals, European settlers in Queensland had already begun to gain rather more direct proof of this beast's reality. In 1871, Brinsley G. Sheridan, police magistrate of Cardwell in Rockingham Bay, revealed that while walking with his teenage son along a path near to the shore their terrier dog had picked up a scent from some scrub nearby that led them, half a mile further along, to a strange animal lying in long grass. According to Sheridan, it was:

> As big as a native Dog [dingo]; its face was round like that of a Cat, it had a long tail, and its body was striped from the ribs under the belly with yellow and black. My Dog flew at it, but it could throw him. When they were together I fired my pistol at its head; the blood came. The animal then ran up a leaning tree, and the Dog barked at it. It then got savage and rushed down the tree at the Dog and then at me. I got frightened and came home.



Representation of the Queensland tiger, based upon eyewitness descriptions. (Dami Editore s.r.l.)

Shortly after Sheridan's sighting, a fawn-coloured creature with darker markings, a round head, long

tail, and total size larger than that of a pointer dog was reported by Robert Johnstone, an officer of the Native Police, who spied it moving from tree to tree in scrub on the coast-range west of Cardwell.

Many similar reports followed during the early years of the twentieth century, which for the most part were sufficiently sober and consistent for science to look very favourably upon the Queensland tiger's status as a valid, undiscovered member of the Australian fauna. This was reflected in the decision by A.S. le Souef and Harry Burrell to include it in their definitive guide to Antipodean fauna, *The Wild Animals of Australasia* (1926), which contained, under the heading 'Striped Marsupial Cat', the following field description:

> Hair short, rather coarse. General colour fawn or grey, with broad black stripes on flanks, not meeting over the back. Head like that of a cat; nose more produced. Ears sharp, pricked. Tail well haired, inclined to be tufted at end. Feet large; claws long, sharp. Total length about five feet; height at shoulder eighteen inches.

I would question their description of its stripes. In many *yarri* reports, its stripes are likened to unbroken hoops (thereby verifying the testimony of the Herbert Vale aboriginals).

The *yarri*'s history has a most unusual aspect, flagrantly breaching the standard code of practice for all self-respecting cryptozoological creatures. For whereas such beasts are often seen and occasionally even photographed, but never captured or killed, during this century's early years *yarri* carcasses apparently turned up with almost embarrassing frequency!

Around 1900, while walking through scrub on the Atherton Tableland, J. McGeehan heard a noise farther ahead that implied a confrontation between his dogs and a wild animal. When he reached the spot, he saw that the dogs had just killed some form of cat-like beast, seemingly a young specimen, but one that did not belong to any species known to him:

> It partly resembled a large domestic cat, excepting for the body, which was rather light in build. The most striking part of its appearance was the well defined hoops of colour which encircled its body. These hoops or bands appeared to be about 2½ inches in width, and the colours were white and dun alternating in perfectly marked circles. As far as I can remember the alternate colours did not extend to the head, legs or tail. I think that the colour of these parts was dun . . . I noticed that, when the mouth was opened, the top and bottom jaws, at the front, contained long fine fangs, but regret that I cannot now recollect whether the number on each jaw was two or four. Whichever number it was the fangs were in sets of two and about a quarter of an inch apart . . . From the point on the backbone immediately behind the shoulders to the butt of the tail, 14 inches. Length of front legs from the bottom of the paws to junction with the chest, 7½ inches. Height (from ground to back) 11½ inches to 12 inches.

In 1910, a Kuranda inhabitant evidently unfazed by these animals commented:

> Most of the tiger cats which I have killed were about four feet long and of fawn colour, with black stripes running across the body, which was fairly long, unlike an ordinary cat.

Sometime between 1900 and 1926, J.R. Cunningham and his dog encountered a *yarri* at Gootchie, near Maryborough. His dog had treed it, and when Cunningham rode up on his horse and saw it, he used his whip to lash the creature across its head, knocking it down on to the ground – where his dog promptly attacked and killed it. According to Cunningham's description, the creature had a long body and tail, with a total length of almost 6 ft, and a shoulder height of 20–24 in. Its pelage was fawn-brown, bore black vertical stripes, and was sleek rather than shaggy. Its legs were relatively short, and its teeth were long, as were its claws – but, unlike those of true cats, they did not seem to be retractile.

Cunningham was convinced that it was neither a feral domestic cat nor any of those weasel-like marsupials known as dasyures or native cats (confusingly for the cryptozoologist, one of these species, *Dasyurus maculatus*, is widely referred to as the tiger cat – but, like all dasyures, it is spotted, not striped). Moreover, in 1919 he witnessed the death of another *yarri*, this time at Eungella, near Mackay. It was cornered in a chicken run, where it had slaughtered virtually all of the poultry – but, before it had chance to escape, their irate owner blew half of the luckless beast's head away with his shotgun.

In a similar incident, this time on a property at the head of the Mulgrave River adjoining an expanse of rainforest, one night sometime between 1928 and 1930 a Mr Woods heard a furious commotion in the hen house, and when he investigated he discovered a huge striped cat-like beast inside, surrounded by dead chickens. On that occasion, the creature made a swift, successful exit and fled up a nearby tree, but it was dislodged by a farmhand who dispatched it

with an axe when it fell to the ground. To their great surprise, it proved to be the size of a kelpie dog – the large Australian sheepdog.

Two dead *yarris* were mentioned by le Souef and Burrell in their tome. One, measuring about 5 ft long from nose-tip to tail-tip, had been shot by a settler in the Atherton district when it began stalking his goats, and was observed by naturalist George Sharp. Some time earlier, Sharp had seen a living *yarri*, moving through scrub at the head of the Tully River. The other example, about 18 in high and as long as a large cat (thus a young specimen?) had been trapped by a Mr Endres of Mundubbera. He declared that it had been very savage when caught, was striped, '. . . but not right round', and possessed a very short head and neck.

On 12 December 1932, Brisbane's *Daily Mail* reported the shooting of a 'marsupial tiger' on the fringe of extensive scrub on the Cardwell Range, by some travellers that included a Mr A.W. Blackman from Upper Murray. Half as big again as a domestic cat (hence presumably a juvenile specimen), it was striped like a tiger and ferocious in temperament.

With such a selection of specimens as these, one might have expected the mystery of the Queensland tiger to have been resolved long ago. The tragedy, however, is that not one of these carcasses was forwarded to a scientific establishment for identification and study. In the case of Woods's *yarri*, for example, the pelt was left unattended until the following morning – by which time it had been mauled to the point of total ruin by dogs. The head and body of the dead specimen seen by Sharp had been devoured by wild pigs, and as its pelt was not preserved, this rotted away. All of the others were apparently discarded.

When scanning through the *yarri* reports on file, certain features recur time and again. The animals are inordinately aggressive, very adept arboreally (shinning up trees at the first sign of danger) and have extremely prominent, protruding teeth at the front of their jaws. The frequently cited pre-1930 encounter of G. de Tournoeur and P.B. Scougall with a *yarri* is one that vividly captures the aura of danger and menace that this creature evokes. They had been riding from Munna Creek towards Tiaro when they unexpectedly came upon:

> . . . a large animal of the cat tribe, standing about 20 yards away, astride of a very dead calf, glaring defiance at us, and emitting what I can only describe as a growling whine. As far as the gathering darkness and torrential rain allowed us to judge he was nearly the size of a mastiff, of a dirty fawn colour, with a whitish belly, and broad blackish tiger stripes. The head was round, with rather prominent lynx-like ears, but unlike that feline there were a tail reaching to the ground and large pads. We threw a couple of stones at him, which only made him crouch low, with ears laid flat, and emit a raspy snarl, vividly reminiscent of the African leopard's nocturnal 'wood-sawing' cry. Beating an angry tattoo on the grass with his tail, he looked so ugly and ready for a spring that we felt a bit 'windy'; but on our making a rush and cracking our stockwhips he bounded away to the bend of the creek, where he turned back and growled at us.

In the 1960s and 1970s, the leading *yarri* investigator was naturalist Janeice Plunkett, who gathered many eyewitness reports. Peter Makeig featured several of these in an article within the *North Queensland Naturalist* for 1970, including, for example: '. . . an animal about as large as a medium-sized dog [that] rushed out and climbed a nearby tree. The animal was very savage. Its coat was beautiful and striped like a tiger.'

That was how an eyewitness described a *yarri* spied in 1925 in the Bellenden Range, and a specimen confronted at Kuranda in 1945 had: '. . . a round face and four exposed "tiger teeth" . . . the other salient point in my opinion was the fact that big savage pig dogs were terrified of it.' According to a *yarri* eyewitness who saw one on Mount Molloy in 1953, its head: '. . . was a good deal larger than an old tomcat, with teeth a lot like the extinct sabre toothed tiger.' As for the individual spotted on Mount Bartle Frere in 1968, its head: '. . . appeared round and broad, its nose shorter and broader than a dog's. Some of its teeth appeared to protrude out and upwards like tusks.'

In recent years, *yarri* reports have become far fewer, leading to speculation that the species was dying out. Indeed, within their book *Out of the Shadows* (1994), Tony Healy and Paul Cropper are concerned that the *yarri* may have already gone – a victim, they suggest, of strychnine baits meant for dingoes, and of the abundant, tasty-looking, but lethally poisonous cane toad (introduced from South America by man).

New South Wales researcher Rex Gilroy, conversely, believes that it does still survive, and has collected some compelling accounts from the past 20 years. In 1984, for instance, after investigating a lion-like roar emerging from trees on the opposite side of a creek where he was camped at Daintree, Bill Norman came upon a '. . . panther-sized striped

cat-like animal' in a tree, consuming a sheep. Displaying, for a *yarri*, an unwonted degree of diffidence in the face of human proximity, the animal promptly descended the tree and fled into the bush.

In early 1987 near Hughenden, a hunter who had wounded a dingo was about to pursue it when a large hay-coloured beast with black body stripes appeared, and proceeded to rip the dingo to pieces, literally. Wisely, the hunter abandoned his quarry and left – quickly.

It is clear from the reports given here that attempts to identify the *yarri* as anything so conservative as an oversized domestic cat, misidentified dog or dingo, or the occasional escapee tiger are woefully ill-founded. Characteristics such as its distinctive hoop-like stripes, protruding tusk-like teeth, tree-climbing prowess, and longstanding aboriginal knowledge of its existence (to the extent that it has its own name) at once discount all of those identities and label it as a bona fide native species – but there is none known today that offers the slightest correspondence to it. So what else is on offer?

The once and future thylacine – in Australia and New Guinea?

More as an act of despair than diligence, some investigators have sought to reconcile the *yarri* with the Tasmanian wolf or thylacine *Thylacinus cynocephalus* – the world's largest modern-day species of carnivorous marsupial, officially denounced as extinct in Tasmania since 1936, but which probably still persists here in small numbers, judging from an immense file of reliable, detailed eyewitness reports that grows larger every year. It also existed on mainland Australia until 2,300 or so years ago, when competition with the introduced dingo harried this canine marsupial into extinction there.

However, a resolutely terrestrial, dog-headed creature with stripes only upon the upper portion of its back is hardly a plausible identity for an effortlessly arboreal, cat-headed beast with hoop-like bands sometimes encircling its entire body.

As an interesting aside, reports of elusive, unequivocally dog-headed beasts with thylacine-like stripes emerge every so often from the mainland. And in 1966 a hairy thylacine carcass of controversial age was found in a cave at Western Australia's Mundrabilla Station – lending support to the possibility that this species has not died out here after all. A handful of photos allegedly depicting mainland thylacines are also on file, but none of these is remotely convincing as far as I am concerned. In their afore-mentioned book, Healy and Cropper explore claims that thylacines were released in parts of Australia in the pre-1930s, which, if one day confirmed, and assuming they survived and bred, would provide a wholly different explanation for this species' existence here. Corroborating this scenario is the fact that the mainland aboriginals have no name or folklore attached to the thylacine – which is unusual if this animal has indeed lingered on here as a *native* species, but is precisely what one would expect if it has merely been re-introduced in modern times.

Do thylacines still exist in mainland Australia and New Guinea?

Following the discovery of a Pleistocene-dated thylacine mandible in the Eastern Highlands District of Papua during April 1960 by Dr Susan Bulmer, this species is now known to have formerly existed in New Guinea too – and again, it may still do so. When grazier Ned Terry visited the remote, little-explored highlands of Irian Jaya (Indonesian New Guinea) during the early 1990s, the natives spoke of a mysterious beast called the *dobsegna*. Its description – as documented by Greg Morgan in a recent *Garuda* article – instantly recalls the thylacine:

> . . . the locals rarely saw the animal in full daylight. Usually it was seen hunting at dawn or dusk for small marsupials and birds. The people said they were very afraid of it because they associated it with evil spirits and used its faeces to perform magic on enemies. They said its dens were usually in rocks or caves and described its head and shoulders as being like those of a dog except that it had a huge, strong mouth and a long, thin tail almost as long as its body. From the ribs to the hips, they said, there were no intestines (indicating that it was very thin there) and that in that area it had stripes.

Seldom have I encountered a more accurate verbal portrait of a thylacine. Even the reference to its mouth is significant – as dramatically captured in a short film depicting a yawning thylacine in Hobart's Beaumaris Zoo *circa* 1935, this species could open its long jaws far wider than any eutherian canid, yielding an astonishing gape that exceeded 120 degrees.

If the thylacine's existence in Irian Jaya is eventually confirmed, this would be an exceedingly significant example of prehistoric survival. Bearing in mind that as recently as 1994, these self-same highlands revealed a hitherto-unknown species of large, black-and-white tree kangaroo, known to the natives as the *bondegezon*, it would clearly be rash to deny the likelihood that there are other zoological surprises still in store here.

When lions had pouches

Not so long ago, geologically speaking, there would have been no problem in identifying the *yarri* – thanks to the existence of a creature called *Thylacoleo carnifex*, the marsupial lion.

Evolving not from the dasyurid lineage that gave rise to all of Australia's other carnivorous marsupials, *Thylacoleo* claimed descent from the same family tree that spawned the herbivorous phalangers, koala, and wombats. Through a somewhat incongruous quirk of evolutionary adaptation, however, it gradually became modified to occupy the hitherto vacant ecological niche in Australia for a feline meat-eater. Morphologically, therefore, it became a counterfeit cat – taxonomically, it is best defined as a 'killer possum'.

Judging from reconstructions based upon its fossilized remains, *Thylacoleo* ('pouched lion') was a cat-shaped beast the size of a leopard, with a short, round head, powerful jaws, fairly long limbs, and, suggestive of arboreal inclinations, a pseudo-opposable thumb on each forepaw, which would have been of great value in grasping branches, as well as prey. Each of its other toes bore a formidable claw, and it is likely that, as with many large eutherian felids, its pelage was striped or brindled for camouflage purposes.

There was, however, one feature that instantly separated *Thylacoleo* from all true cats – its teeth, most especially its fangs. Whereas those of all eutherian carnivores consist of greatly enlarged canines, the pouched lion's had evolved from its 'front teeth' or incisors – becoming huge tusk-like structures projecting outwards like the beak of a parrot.

It can be readily seen that the above reconstruction of *Thylacoleo*'s likely appearance in life is an extraordinarily close match with eyewitness descriptions of the *yarri*. Indeed, the reconstruction is so similar to these descriptions that it could be easily mistaken for one of them itself. Moreover, if the *yarri* is indeed a living *Thylacoleo*, this would explain why its teeth have attracted such attention from eyewitnesses and have been likened to tusks. Not only is this an accurate description of them, but by being incisors they would be present at the front of the animal's jaws, and would therefore be more readily visible than even the large but laterally sited canine fangs of eutherian cats.

Skull of the marsupial lion Thylacoleo carnifex *– identity of the Queensland tiger? (Fortean Picture Library)*

Moreover, in 1978 anthropologist Dr John Clegg described an ancient aboriginal cave painting in the Northern Territory's Arnhem Land Plateau portraying an animal that could possibly be a striped cat; and in 1984, Drs Peter Murray and George Chaloupka conceded that this example and also one other painting here may indeed depict *Thylacoleo*.

I am sufficiently convinced by the compelling correspondence between *Thylacoleo* and the *yarri* to believe that if the latter does exist, it is indeed a living species of pouched lion – either a surviving representative of *T. carnifex* itself, or a modern-day descendant. So many reports of *yarris* emanate from localities close to expanses of rainforest that it seems reasonable to assume that this remote, rarely visited habitat is their natural terrain, from which they periodically emerge in search of prey if conditions necessitate. Most fossils of *T. carnifex* are about 16,000 years old, but some could be as young as 6,500 years. In any case, the rainforests in the heart of *yarri* territory have remained virtually unchanged for the past 30,000 years, and there is good reason to

suppose they could have supported a self-perpetuating population of pouched lions into modern times.

Certainly, a niche for a large feline mammal is still present within the Antipodean ecosystem. Judging from numerous reports of mysterious tawny or black 'big cats' reported from many parts of Australia during the past century, however, even if the *yarri* does exist it is having to share this niche with a motley assortment of escapee pumas, black panthers, and the like – which begs a somewhat disturbing question. Could the real reason for the *yarri*'s apparent decline in recent times be competition with out-of-place eutherian cats?

It is said that history never repeats itself. Let us hope that this is true. How terrible it would be if the decline and fall of the mainland thylacine at the hand (or paw) of the dingo is being (or has already been) reprised with a living, undiscovered species of marsupial lion suffering at the hand of pumas, panthers, and other exotic feline pets abandoned by their owners.

Mystery lions of the Blue Mountains

Speaking of out-of-place felids, one or more African lions on the loose is the conservative explanation generally offered by naturalists when faced with the enigma of the Blue Mountains' maned mystery beasts. West of Sydney, New South Wales, the Blue Mountains have long been associated with rumours and reports of huge cat-like beasts of ferocious temperament. Interestingly, they are not confined to modern reports but were well known to the aboriginals who once inhabited this range. They called them *warrigals* ('rock dogs') – a name sometimes applied nowadays to the dingo, but it is clear from their descriptions that their *warrigals* were something very different from a dingo.

Rex Gilroy has made a detailed study of the Blue Mountain lions, and according to his published account (*Nexus*, June–July 1992) the aboriginals described these animals as 6–7 ft long, around 3 ft high, with a large cat-like head, big shearing teeth that protruded from their jaws, brown fur (sometimes light, sometimes dark – sexual, or age, differences?), and a long shaggy mane. Testifying to these animals' continuing presence here, this is also an accurate portrait of the terrifying leonine beast that approached three young shooters in the Mulgoa district south of Penrith, close to the Blue Mountains' eastern escarpment, one day in 1977 – fleeing into nearby scrub only when the alarmed trio fired at it. A similar creature had been reported from this same region in 1972, where it had allegedly been killing sheep.

Back in April 1945, a bushwalking party clambering down Mount Solitary's Korrowal Buttress made good use of their binoculars to watch four *warrigals* moving across Cedar Valley. And as recently as 1988, some campers near Hampton, west of Katoomba, saw one for themselves – this area had been experiencing some severe cases of cattle mutilation, a feature that crops up time and again when charting sightings of *warrigals*.

Based upon the longstanding history of these animals, I find it difficult to believe that they could be escapee lions or suchlike. An undiscovered native species is the only tenable explanation – echoed by Gilroy, who proposes that the *warrigal* is a surviving species of pouched lion. As it differs markedly in appearance from the *yarri*, however, we can only assume that if Gilroy's hypothesis is correct there are two separate species of pouched lion currently prowling various portions of Australia's wildernesses – a remarkable concept, but none the less the only one that offers a satisfactory conclusion to this extraordinary saga.

Devil-pigs and diprotodonts

One of the most unlikely cryptozoological creatures on file is the New Guinea 'rhinoceros'. On 28 January 1875, *Nature* published the following letter from Alfred O. Walker:

> Lieut. Sidney Smith, late of H.M.S. *Basilisk*, reports that while engaged in surveying on the north coast of Papua, between Huon Bay and Cape Basilisk, being on shore with a party cutting firewood, he observed in the forest the 'droppings' (excrement) of a rhinoceros in more than one place, the bushes in the neighbourhood being also broken and trampled as if by a large animal. The presence of so large an animal belonging to the Asiatic fauna in Papua is an important fact.

However, scepticism on the part of the *Nature* editors concerning this alleged fact was sufficient for Walker to submit an expanded account, published in the journal's next issue:

> The heap of dung first seen, which was quite fresh (not having apparently been dropped more than half an hour), was so large that it excited Mr. Smith's curiosity, and he called Captain Moresby to see it. Neither of them knew to what animal to assign it. Quantities of dry dung were afterwards seen. Shortly afterwards, the *Basilisk* being at or near Singapore, Capt. Moresby and Mr. Smith paid a visit to the Rajah of Johore, who had a rhinoceros in confinement. Mr. Smith at once

observed and pointed out to Capt. Moresby (who agreed with him) the strong resemblance between the dung of this animal and that they had seen in Papua.

Moresby was sufficiently intrigued to include his own account of this incident in his book *Discoveries and Surveys of New Guinea and the d'Entrecasteaux Islands* (1876), and the droppings do seem to have been much more substantial than those produced by a feral domestic pig – the only known terrestrial ungulate of note on New Guinea (droppings from carnivorous mammals are very different). Notwithstanding this, the concept of an undiscovered form of rhinoceros existing there continued to be rejected, and by such acknowledged authorities as naturalist Louis d'Albertis and former Papuan governor Sir William MacGregor. More recently, the reputed occurrence on New Guinea of the Javan rhino *Rhinoceros sondaicus* was similarly dismissed in a terse paper by Russian researcher Professor W.G. Heptner – since when this entire subject has faded into obscurity.

Yet it cannot be denied that *something* was responsible for the conspicuously large animal droppings spied by Smith and Moresby. So if, as seems certain, there is no justification for believing that New Guinea boasts any species of rhinoceros (unknown or known), some other explanation must be sought – which leads directly to an even greater cryptozoological conundrum, a mysterious creature quite probably responsible for these droppings, and graphically referred to by one very startled eyewitness as a 'devil-pig'!

In a letter to *Nature* of 4 February 1875, and published alongside Walker's second communication, German zoologist Dr Adolf Meyer discounted any likelihood of a rhino in New Guinea, but documented a personally received account of another unexplained mammal there, one that even today still awaits scientific investigation. Meyer wrote:

> I beg leave to mention a report of a *very large quadruped* in New Guinea, which I got from the Papuans of the south coast of the Geelvinks Bay . . . when hunting wild pigs along with the Papuans, they told me, without my questioning them, of a *very large pig*, as they called it, fixing its height on the stem of a tree at more than six feet. I could not get any other information from them, except that the beast was very rare, but they were quite precise in their assertion. I promised heaps of glass pearls and knives to him who would bring me something of that large animal, but none did.

Meyer never did succeed in ascertaining this mysterious mammal's identity, but just over 30 years later a dramatically close encounter took place, with what would seem to have been *two* such beasts, during a major expedition led by Papuan pioneer Captain Charles A.W. Monckton to Mount Albert Edward in spring 1906.

On the fateful day in question, 10 May, Monckton sent on ahead two of his party's native members, Village Constable Oina and Private Ogi, to determine whether a track spotted during the previous day was negotiable. When they did not return, the party became anxious, and some more of its members were dispatched beyond the camp's perimeter to fire shots, in the hope that they would be answered by the two missing men. After a time, the shots were returned, and later Oina and Ogi were brought back, whereupon Ogi was found to be suffering from exhaustion and shock brought on by an astonishing experience.

Ogi asserted that during their investigation of the track, he and Oina had somehow become separated from one another and, while attempting to locate Oina again, Ogi had come upon two extraordinary beasts feeding upon a patch of grass. They were so bizarre in appearance that the petrified Ogi felt sure that they were pig demons or 'devil-pigs'! According to his description, each of these 'devil-pigs' was approximately 5 ft long, and 3½ ft high, had a horse-like tail, cloven feet, a very dark skin with pattern-like markings, and a long snout. This description does not match that of any species currently known to inhabit New Guinea. Ogi tried to shoot one of these curious creatures, but whether through cold, fright, or both, his hand shook so much that he missed. What happened after that is unclear – whether Ogi chased the animals or whether they chased him is unknown – but eventually Oina discovered him in a pitiful state of shock, and took him back to camp.

Monckton was very perplexed concerning this incident, but when he documented it in his book *Last Days in New Guinea* (1922) he affirmed that the tracks of a very large cloven-footed animal had indeed been found on Mount Albert Edward. He also noted that Sir William MacGregor had mentioned a sighting of an unidentified long-snouted animal in his report of the Mount Scratchley Expedition. Even so, not everyone was convinced about the existence of the devil-pig, and the more cynical sceptics later nicknamed it 'Monckton's gazeka'.

Yet in view of the corroboration of Ogi's report by the Mount Scratchley sighting, by Meyer's information, and by Monckton's firsthand knowledge

of cloven-footed tracks in the area (not to mention, of course, the extra-large excrement observed by Smith and Moresby), it would be unwise to dismiss the devil-pig out of hand. Moreover, in 1910 Walter Goodfellow learnt of a similar beast from the natives in the vicinity of the Mimiko River while participating in a British Ornithologists Union expedition in what was then Dutch New Guinea (nowadays Irian Jaya, Indonesian New Guinea).

Interestingly, there is even a native New Guinea myth regarding a monstrous devil-pig, as documented by Monckton in a later book, *New Guinea Recollections* (1934) – and it hardly needs to be said that the chronicles of cryptozoology are packed with folktales of unlikely creatures that have none the less eventually revealed themselves to be real after all.

So, if the devil-pig does exist in reality as well as in reverie, what could it be? It is certainly not a feral domestic pig – although there are many all over New Guinea, none attains the size of Ogi's creatures. Overall, it bears an intriguing similarity to the tapirs – those odd-looking ungulates (hoofed mammals) that resemble the outcome of an unlikely liaison between a large pig and a small elephant, yet are most closely related to horses and rhinos. Of the four modern-day species, three are confined to the Americas, and the fourth exists only in Asia (see also pp. 162–4).

The devil-pig's general size compares with the smaller species of New World tapir, as does its dark coloration (though its patterning of stripes is reminiscent of juvenile specimens), and in particular its long snout. Conversely, its horse-like, perhaps bushy, tail is not a tapir feature; moreover, as tapirs are perissodactyls (odd-toed ungulates), the devil-pig's cloven (even-toed) feet pose something of a problem. An even greater difficulty to be faced when attempting to ally it with tapirs, however, is its actual presence on New Guinea, because the fauna of this vast island is predominantly Australian, not Asian, in nature. That is, virtually all of New Guinea's native mammals are marsupials, thus severely limiting any possibility that the devil-pig is a tapir. This same argument also applies to comparisons that Monckton sought to draw between Ogi's beasts and an unusual wild pig called the babirusa, native to the south-east Asian island of Sulawesi (Celebes).

During their long period of evolutionary isolation, however, when Australasia's marsupials radiated to yield morphological and ecological counterparts to many mammalian types found elsewhere in the world, the niches occupied outside Australasia by the robust and lumbering types of hoofed mammal (such as rhinoceroses, oxen, and pigs) were for a time filled here by a family of sizeable herbivorous marsupials called diprotodonts.

There were a number of different types of diprotodont – ranging from the porcine *Zygomaturus* and bovine *Diprotodon* to the 'marsupial rhinoceros' *Nototherium* and, of especial significance to the devil-pig case, the forest-dwelling *Palorchestes*. Some palorchestids were of comparable size and build to true tapirs, and all were equipped with the tapir trademark, an elongated trunk-like snout and upper lip.

Diprotodonts are generally assumed to have been contemporary with early man in Australia. An enigmatic cave painting, believed to be about 10,000 years old, which may be a primitive depiction of *Palorchestes*, was found in 1986 by Percy Trezise on the ceiling of a cave in Queensland's Quinkin Reserve; and a *Nototherium*-like beast is portrayed on a rock face west of Alice Springs. Even so, the last of these marsupial ungulates officially died out at least 6,000 years ago. For quite a long time, it was thought that, despite the occurrence of land-bridges linking Australia with New Guinea during the Pleistocene, diprotodonts never migrated from the Australian mainland to this latter island. Recently, however, fossil zygomaturids have been discovered in New Guinea (and in association with early human remains), as well as a weird form called *Hulitherium* (see p. 140).

Although no fossilized palorchestid has been uncovered here so far, there is a tantalizing piece of iconographical evidence lending support to the possibility that these tapir-like beasts did exist on this island – and until a relatively late date. A series of stone carvings collected in the Ambun Valley of New Guinea's Enga Province from 1962 onwards, and no older than a few millennia at most, depict a very distinctive type of mammal. Its body is basically spherical, with its forelimbs and hindlimbs clasping its belly, and its well-delineated neck bears a narrow head with large ears and eyes, which tapers directly into a short trunk-like snout curving downwards and sporting at its tip a pair of flaring nostrils. This long-nosed beast has traditionally been assumed to be *Zaglossus bruijni*, New Guinea's short-spined, inordinately long-snouted relative of Australia's egg-laying spiny anteaters or echidnas. In 1987, however, mammalogist James I. Menzies offered a very thought-provoking alternative identity for the Ambun beast – a palorchestid diprotodont.

He points out the shape of the Ambun beast's head, with its short tapir-like trunk, prominent external ears and large eyes, corresponds much closer

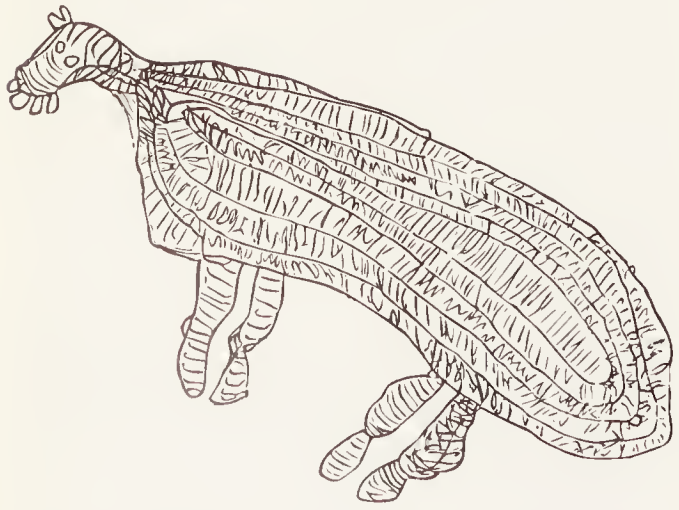
to reconstructions of a palorchestid's head than to that of *Zaglossus* – which only has very small eyes, ears, and nostrils, an almost non-existent neck, globular head, and a particularly long tubular snout.

Perhaps palorchestids did exist in New Guinea – and in view of the devil-pig dossier, perhaps they survive here today, amid its dense, little-explored forests.

Ambun (not *Ambum!) sculpture – does it portray a palorchestid? (Fortean Picture Library)*

The bewildering bunyip – *an aquatic anomaly*

Diprotodonts have been implicated in the identity of at least three other Australasian mystery mammals, of which the most famous is the *bunyip*. This term is used Down Under as a colloquial noun for anything puzzling or unusual, but in cryptozoological parlance it is the name of an unidentified, aquatic mammal widely reported for centuries from Australian lakes and rivers, particularly in the south-east.



Aboriginal drawing of a bunyip *from the Murray River vicinity. (Fortean Picture Library)*

Having said that, some accounts are clearly based more upon legend or vivid imagination than upon any bona fide beast – such as the two-headed wonder of Tuckerbil Swamp near Leeton, New South Wales, which could allegedly swim in both directions without changing gear, and was spasmodically reported until summer 1929–30; or the even more marvellous three-headed *bunyip*, said to be 60 ft long and covered in shiny scales, that was reputedly spied in July 1972 by fishermen near the mouth of Gudgerama Creek, 200 miles east of Darwin, in the Arnhem Land Aborigine reserve.

Fortunately for the *bunyip*'s credibility, there are also many much more sober reports on file. One morning in November 1821, a jet-black water beast with a bulldog-like head was sighted 100 yards away in the marsh running into Lake Bathurst South, New South Wales, by E.S. Hall. Another example with a head like that of a bulldog was a black shaggy specimen 4–4½ ft long, spied in Tasmania's Lake Tiberias during autumn 1852; a comparable *bunyip* was seen in January 1863 by Charles Headham in Tasmania's Great Lake. And in 1872, the men on board a punt floating upon Victoria's Lake Corangamite were so startled by a close encounter with an inquisitive surfacing *bunyip* – likened by them to a big retriever dog with a round head and tiny ears – that men and punt abruptly parted company.

Sightings such as these are somewhat reminiscent of seals. Even more so was the shark-tailed creature whose head was specifically described by its eyewitness as seal-like, and which was spotted surfacing near Dalby, in Queensland, in 1873. And there is little doubt that certain reports can be explained as simple misidentifications of seals and other known animals, such as dugongs and crocodiles. Occasionally, a more exotic identity is exposed. In 1950, police unmasked the elusive booming *bunyip* frequenting a swamp near Wee Waa, New South Wales, as a heron-related bird called the bittern. Similarly, in 1960, the mysterious kitten-headed *bunyip* of Sydney's Centennial Park, with a neck like a tortoise and a tail like a porcupine's quills as described by eyewitnesses, proved to be a musk duck.

But what of the rest? How can we explain reports of emu-necked *bunyips*, for instance, or the very sizeable *bunyip* spied during 1848 in the Eumeralla River near Port Fairy, Victoria, by a shocked stockman – who described it as being as heavy as a very large bullock and brown in colour, with a kangaroo-like head, long maned neck, and a huge mouth brimming with teeth? After all, these seem more akin to the long-neck category of water monsters than to

the bulldog-headed *bunyips* recorded above. Also in need of an identity is the pale-coloured specimen 'with the face of a child' and a body the size of a large dog that horsemen showered with stones while riding across Canberra's Molonglo River in 1886.

If only scientists could receive some physical remains of *bunyips* for study. In fact, at least one genuine *bunyip* skull may have been made available – only to be wrongly identified.

In 1846, naturalist W.S. Macleay identified a fragment from a supposed *bunyip* skull found by Atholl Fletcher on the banks of New South Wales's Murrumbidgee River as possibly that of a young camel or a deformed colt. And in a sight-unseen pronouncement, London's Professor Richard Owen breezily dismissed it as that of a calf. As there is an appreciable degree of difference between a calf's skull, a camel's, and that of a colt (deformed or otherwise), it is odd that three different identities were proffered for the same skull – thus suggesting that it was by no means readily identifiable with a known species. This intriguing specimen was deposited in the Australian Museum, but in best *bunyip* tradition it later vanished.

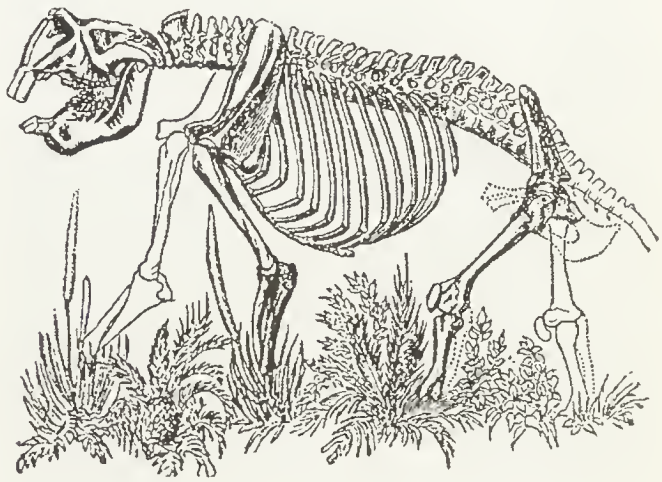
As far back as 1924, Dr C.W. Anderson of the Australian Museum had suggested that stories of the *bunyip* could derive from aboriginal legends of the extinct diprotodonts – a view repeated much more recently in *Kadimakara* (1985) by Australian zoologists Drs Tim Flannery and Michael Archer, who nominated the palorchestids as plausible candidates.

However, their tapir-like snouts conflict with the dog-like heads frequently described by *bunyip* eyewitnesses – but comparisons with *Diprotodon* yield a greater correspondence. Nevertheless, until a specimen (preferably a complete one, to avoid the type of ambiguous identification meted out to the Murrumbidgee skull) becomes available for study, reconciling the *bunyip* with *any* type of diprotodont necessarily remains an exercise in speculation.

Gyedarra/kadimakara – *diprotodonts in the desert?*

According to the aboriginals of Central Australia, this vast region's harsh, inhospitable desertlands were once home to a huge grass-eating quadrupedal beast known variously as the *gyedarra* or *kadimakara*. No such beast is known to modern-day zoology, but several millennia ago, when this land was less arid, its wetlands were inhabited by great herds of the rhino-sized *Diprotodon*. As their lakes and swamps dried out, however, huge numbers died of starvation and dehydration, so that today their fossilized remains are abundant here.

The most famous example is that of Lake Callabonna, in north-eastern South Australia. Once encircled by lush vegetation, it was a favourite feeding haunt of *Diprotodon*, which grazed there in huge numbers. About 17,000 years ago, however, the climate became warmer, and the lake began to shrink. Hundreds of these placid but cumbersome beasts died of thirst and hunger in the parched terrain, or became so weak that they were trapped by the thick sticky mud that had once been cool water. During two expeditions to this locality, in 1893 and 1953, as many as a thousand complete skeletons of *Diprotodon* were unearthed.



Skeleton of the giant herbivorous marsupial Diprotodon – *has it really died out?*

When an aboriginal from the Gowrie water holes was shown diprotodont bones by Australian Museum palaeontologist Dr George Bennett in the early 1870s, he claimed that they were from the *gyedarra*, a beast as large as a heavy draught horse, and stated that his forefathers had recalled seeing them in deep water-filled holes in this area's riverbanks, from which they would emerge only to feed. As orally-preserved traditions rarely survive longer than a few centuries without becoming greatly distorted, and as the above description compares well with the anticipated appearance and lifestyle of *Diprotodon*, this animal may have persisted into much more recent times than palaeontologists currently acknowledge.

During the early 1840s, German explorer Dr Ludwig Leichhardt investigated rumours of *Diprotodon*-like beasts existing in Western Australia's arid interior, but after setting off in search of them during 1848, his expedition vanished without trace.

Australia's dry heartland is among the world's most environmentally hostile (and therefore least-explored)

areas, but who can say whether some diprotodonts gradually adapted to the changing habitat here, acquiring the capability to withstand the harsh new regime imposed by the desertlands' formation? Indeed, as pointed out in *Kadimakara* by Victoria Museum palaeontologist Dr Tom Rich, *Diprotodon* may actually have owed its successful existence in the late Pleistocene to the spread of arid conditions in Central Australia during this period.

If they did adapt, there seems no reason why they could not have survived into the present day, rarely spied even by the aboriginals and undisturbed by western settlers.

The yahoo – *a marsupial ape?*

Australia's longstanding isolation from other continental land masses must surely make it one of the last places on earth where we might expect to find reports of undiscovered primates. Yet at least two different types appear in the cryptozoological chronicles, and are often confused with one another. One is an alleged ape-man or man-beast called the *yowie* (see p. 172). The other seems to be more ape than ape-man, and is known as the *yahoo*.

The *yahoo*'s leading investigator is Canberra scholar Graham C. Joyner, who believes that its name is derived from the orang-utan, which was also termed the *yahoo* in England when the first specimens to reach that country arrived in the early 1800s. This in turn suggests that the *yahoo* is indeed ape-like – but is it actually an ape? Excluding the highly unlikely possibility that as long ago as the beginning of the nineteenth century a sizeable number of escapee apes from captivity were roaming the Australian countryside, and recalling Australia's virtual monopoly of marsupials among its contingent of native mammals, it is far more likely that the *yahoo* is a marsupial that resembles an ape – but today's array of pouched mammals are noticeably bereft of anthropoid counterparts, so what could it be?

One of the most striking *yahoo* reports was published in 1912 by the Sydney *Sun* newspaper, documenting surveyor Charles Harper's observation, made by campfire light, of a large and very bizarre beast in the New South Wales bush. According to Harper:

> Its body, legs, and arms were covered with long, brownish-red hair . . . but what struck me as most extraordinary was the apparently human shape, but still so very different . . . The body frame was enormous, indicating immense strength . . . The arms and forepaws were extremely long and large, and very muscular . . . All this observation occupied a few minutes while the creature stood erect, as if the firelight had paralysed him. After a few more growls, and thumping his breast, he made off, the first few yards erect, then at a faster gait on all fours through the low scrub. Nothing would induce my companions to continue the trip, at which I was rather pleased than otherwise, and returned as quickly as possible out of reach of Australian gorillas.

Although the chest-beating activity is certainly reminiscent of a male gorilla's warning behaviour, the rest of the description offers scant similarity to this species, or indeed to any other mammal currently known to science. Other reports, generally consistent with this description, furnish additional details, collectively portraying a nocturnal beast principally quadrupedal but capable of standing erect on its hind legs and thereby attaining a height of 5–6 ft, covered in dark fur upon much of its torso but lighter on its neck, limbs, and belly, equipped with very long, muscular arms and elongated toes, but lacking a tail.

From this reconstruction, Joyner initially sought to identify the *yahoo* as an undiscovered, surviving species of giant wombat. One pertinent example is the mighty *Phascolonus gigas*, standing 3 ft at the shoulder and probably resembling a small bear, whose fossils have indeed been found in south-east Australia but which officially died out during the Pleistocene's last glacial period. As recently revealed by cryptozoologist Richard Greenwell, however, thoughts have now turned towards a far more intriguing candidate.

In 1986, a radically new species of Pleistocene diprotodont with a highly domed head and a markedly short muzzle was described by Drs Tim Flannery and M.D. Plane from some 38,000-year-old fossils discovered in New Guinea. What made this particular species, the mountain diprotodont *Hulitherium thomasettii*, so interesting was that it eschewed the lumbering, weighty body form characterizing most diprotodonts in favour of a smaller and much more agile skeletal construction, with extremely mobile limbs.

The result of this dramatic deviation from the typical diprotodont blueprint was a creature that would have borne more than a passing external resemblance to a bear – or an ape (two taxonomically dissimilar creatures that nonetheless are frequently confused by eyewitnesses, see p. 153). Indeed, as suggested by Flannery in *The Antipodean Ark* (1987), in terms of its ecological niche *Hulitherium* can be looked upon as New Guinea's answer to Africa's

gorilla, South America's spectacled bear, and Asia's giant panda.

Hulitherium would have been perfectly capable of rising up, and even walking for a short time on its hind legs, just like a bear or an ape – and just like the creature spied by Charles Harper. Perhaps the geographical range of *Hulitherium* stretched beyond New Guinea, to include the Australian mainland. If so, a population surviving largely undetected by western settlers could very satisfactorily explain the otherwise bewildering file of *yahoo* reports.

'Giant rabbits' Down Under

In *On the Track of Unknown Animals* (1958), Dr Bernard Heuvelmans referred to reports by gold prospectors in the deserts of Western Australia telling of encounters with 'giant rabbits' that could vanish at extraordinary speed, and which were sometimes specifically referred to by them as 'kangaroos 12 ft high'. Heuvelmans suggested that these could indeed be giant kangaroos, of which several different species existed until the end of the Pleistocene.

Brown University mammalogist Professor Christine Janis later nominated the short-faced kangaroos *Sthenurus* spp. (up to 4 ft tall) or, particularly, the goliath kangaroo *Procoptodon goliah* (up to 9 ft tall) as suitable Pleistocene-dated identities for these '[illegible] rabbits'.

In 1978, excavations by Sydney University anthropologists at a swamp in Lancefield near Melbourne, Victoria, unearthed fossils confirming that man had coexisted with giant kangaroos such as the 6-ft-tall *Sthenurus titan*, for several millennia after his arrival around 33,000 years ago, but it is likely that these huge yet inoffensive creatures were looked upon as an important source of meat and hence were gradually extirpated.

As with the quadrupedal *Diprotodon* in relation to the *gyedarra* and *kadimakara*, however, if relict populations belonging to these browsing bipedal examples of Australia's Pleistocene megafauna found sanctuary from human persecution in the more inaccessible and uncongenial reaches of the Australian deserts, they could still be there today.

Giant ground sloths, and a beast with the breath of hell

When we think of sloths, we generally picture those famously sluggish, dog-sized, tree-dwelling beasts that spend much of their time hanging upside-down from branches in modern-day Central and South America. Millions of years ago, however, there was a second, very different morphological type – the ground sloth.

Most of these were primarily terrestrial, some were rather bovine in appearance but with shaggy fur, and many were considerably larger than their arboreal relatives. Although principally quadrupedal, ground sloths were capable of squatting erect on their hind legs to browse upon high-level foliage, and their distribution range included not only tropical mainland America, but also North America as well as various of the Caribbean islands.

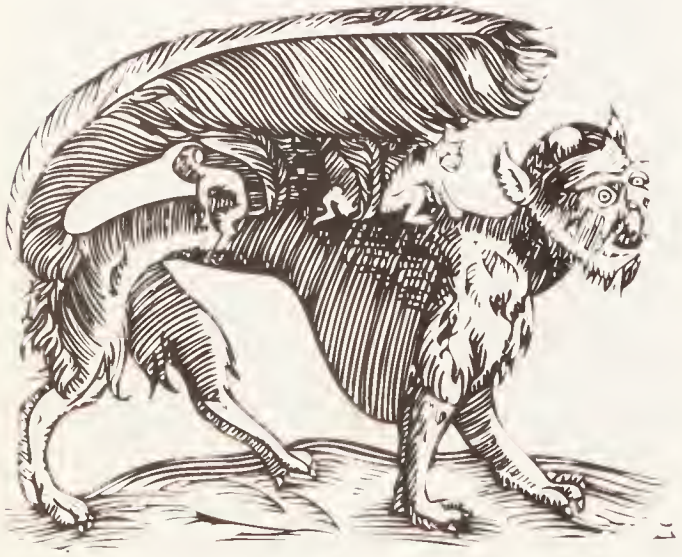
Reconstruction of a ground sloth. (Fortean Picture Library)

There were three separate families containing ground sloths. The largest species were the megatheriids, which were typified by *Megatherium* ('big beast') from the Pleistocene of Patagonia, and which attained approximately the size of an elephant. At the other extreme were the megalonychids, some being the smallest of all ground sloths, but also including the ox-sized *Megalonyx* ('big claw'), which earned its name from the huge claw on the third toe of each of its hind feet. This family also contains today's two-toed tree sloths.

Intermediate in size between the above groups of ground sloth were the mylodontids, which are of particular cryptozoological interest. Although the last representatives of all types of ground sloth *officially* died out several millennia ago, there is some compelling evidence to suggest that there could be a species of mylodontid still alive today, eluding scientific discovery but well known to the native people sharing its secluded jungle domain.

Monkey-faced monsters and hairy pangolins

Perhaps the first indication that ground sloths may still exist came from a French traveller–priest, Father André Thévet, who noted in 1558 the alleged existence in southern Patagonia and southern Chile bordering the Straits of Magellan of a strange beast called the *succurath* or *su*. As seen here, the engraving accompanying his account depicted a very bizarre quadruped. Even allowing for distortion due to the prospect that this drawing was based not upon direct observation of the *su* by the artist but rather upon a second-hand description, the beast cannot be identified with any modern-day South American species.



The su, *as described by Father André Thévet.*

In contrast, the mylodontids were short-faced species with notably long tails, powerful chests narrowing to slimmer abdomens, and paws equipped with powerful claws – yielding a tolerably close comparison with the mysterious *su*. Just a coincidence?

During the 1870s, a no-less eminent eyewitness than Argentina's then Secretary of State, Ramon Lista, encountered a compelling fusion of ambiguous *su* and anachronistic *Mylodon* while exploring Santa Cruz in southern Patagonia. According to his account, the unidentified beast that he and his companions briefly spied emerging and re-entering the thick foliage through which they were travelling resembled in general shape those morphologically reptilian, insectivorous mammals, the pangolins, native to Africa and Asia. Instead of possessing their unique fircone-like scales, however, Lista's beast was covered in long reddish-grey fur – and, seemingly, an invisible suit of armour, because although they fired at it several times, their bullets did not harm it at all.

This last-mentioned characteristic is highly significant because it unifies other aspects of the ground sloth saga. Early explorers of Patagonia had been informed by the Tehuelche Indians that this great region of Argentina is reputedly home to a frightening ox-like animal with short dense fur, huge claws, and the remarkable capability to withstand arrows or bullets – but until Lista's sighting, such stories had been dismissed by science as unfounded folklore. Moreover, during the close of the nineteenth century, a hitherto obscure cave at South America's southernmost tip finally unveiled the key to this mysterious invulnerability.

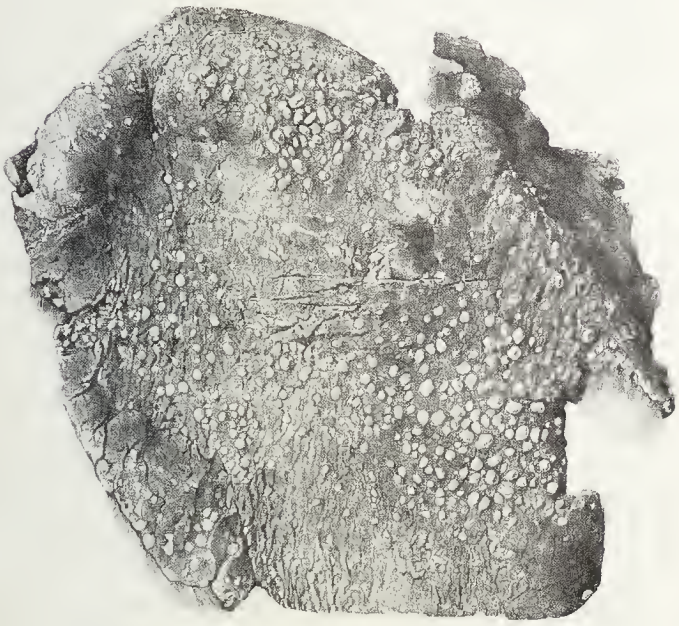
The Last Hope that almost provided the first hope for a living Mylodon

So far, evidence for a living ground sloth had been wholly anecdotal, but then a fascinating discovery was made that offered scientists physical evidence – and with it their first glimmer of real hope – for the genuine existence of such a creature. Or so it seemed.

In January 1895, former German soldier Herman Eberhardt decided to explore an enormous cave called Cueva Ultima Esperanza (Last Hope Cave) situated at the back of his sheep farm settlement at southern Patagonia's Last Hope Inlet, near the Straits of Magellan. Inside, he found a human skeleton, some non-human mammal bones, plus a dried furry skin, 5 ft long and about 2½ ft wide, that he afterwards draped from a tree – enabling successive periods of rain to wash away the great quantity of salt heavily encrusting its upper surface. This bore many very distinctive coarse reddish-grey hairs, but the under surface was even more distinctive, because it was embedded with numerous tiny white bones (dermal ossicles) as if the animal from which it had originated had been encased in a coat-of-mail.

This peculiar pelt was the subject of much local discussion, giving rise to speculation that it may be a cowhide encrusted with pebbles, but Eberhardt discounted this, favouring instead the possibility that it was from the skin of an undiscovered species of seal. In the event, neither of these identities was correct. A year later, Eberhardt was visited by Swedish explorer Dr Otto Nordenskjöld, who cut off a portion of the skin and sent it to Dr Einar Lönnberg of Uppsala Museum for formal examination. In November 1897, Eberhardt received another interested scientist, Dr Francisco Moreno from the La Plata Museum, and gave him what remained of the

skin (once it had become famous, several chunks had been removed by souvenir hunters). Moreno deposited it at the La Plata Museum, and identified its owner as a mylodontid ground sloth.



The preserved Mylodon *skin found in a cave at Last Hope Inlet, Patagonia, in 1895.*

Similar pelts have since been found elsewhere in South America, and it is now known that dermal ossicles – located in the shoulders, thighs, and back – were only possessed by members of this particular family of ground sloths. Interestingly, the protection afforded by them would have been enhanced by another mylodontid characteristic – their shield-like ribcage, comprising a series of ribs so closely aligned alongside one another that they were almost physically united.

On account of its seemingly fresh appearance, the Eberhardt skin was widely considered by scientists – most especially Professor Florentino Ameghino from the Buenos Aires Museum – to constitute tangible proof that the mylodontids had not died out after all, that they were instead represented by a bona fide modern-day form. Furthermore, on account of its impregnable 'armour' of dermal ossicles, this elusive species was deemed to be one and the same as the mysterious bullet-proof beast spied by Lista and reported for centuries by the Tehuelches. Ameghino even went so far as to christen it *Neomylodon listai*.

Moreno, on the other hand, was far from convinced by this line of thought and, in a lecture to London's Zoological Society on 21 February 1899 concerning the skin, he announced that in his opinion it was not of recent age at all. On the contrary, he firmly believed it to be several millennia old, and had been mummified by freak, hermetic conditions present in the cave.

Even so, he did concede that in 1875 an old Patagonian cacique called Sinchel had showed him a cave near the Rio Negro reputedly inhabited by an unidentified beast locally termed the *ellengassen* – said to resemble a hairy ox with a human head, and an armoured body whose only vulnerable spot was an unprotected region on its belly.

Moreno's lecture inspired two other excavations in Cueva Ultima Esperanza during 1899, but far from providing a clearer insight into the possibility of contemporary ground sloths, they succeeded only in inciting further controversy. The first excavation was by Dr Nordenskjöld's nephew, Erland, who uncovered a layer of *Mylodon* dung beneath a deposit containing the bones of llama-related creatures called guanacos that had been killed by early men. From this, Nordenskjöld junior deduced that man and *Mylodon* had both occurred within this cave, but had not coexisted here – that the ground sloths had become extinct long before man had first entered it.

The second excavation, conducted by La Plata Museum geologist Dr Rudolph Hauthal and investigating a different region of the cave floor, found ground sloth dung in a layer *above* some man-made hunting implements. To him, this implied that man had existed here *before* the arrival of ground sloths. Moreover, after finding what seemed to him to be preserved samples of chopped hay, he boldly proposed that man and *Mylodon* had coexisted here, and even that the sloths had been maintained by man in a corral, like domestic cattle.

In short, the excavations had yielded contradictory finds that had in turn given rise to diametrically opposing theories. How could this paradox be resolved? It took many years, but in 1976 it *was* resolved.

During that year, an English researcher called Dr Earl Saxon excavated a previously unexamined portion of the cave floor, and discovered that it contained not one layer of sloth dung but two, sandwiched between which was a stratum of human remains. Suddenly, everything became clear. Both Nordenskjöld junior and Hauthal had found the human stratum, but the former researcher had only uncovered the lower sloth layer, whereas the latter researcher had only uncovered the upper sloth layer – thus explaining why their finds had seemed to contradict one another.

In fact, sloths and humans had never coexisted

inside the cave; instead, their presence here had alternated. From around 13,000 to 12,000 years ago, it had been inhabited by ground sloths; from about 5,700 to 5,600 years ago, man had lived here; and subsequent to this, perhaps up to as recently as 2,500 years ago, ground sloths had occupied it once more. Another *Mylodon* muddle had been sorted out and, of cryptozoological importance, in a manner providing proof of this animal's survival into more recent times than hitherto recognized.

Tragically, however, this was not the only sloth-related confusion to arise at the close of the nineteenth century. During that same period, Moreno's rival Ameghino had further muddied the *Mylodon* waters by claiming this animal to be the identity of another mysterious South American beast – an extremely vicious, aquatic form called the *iemisch* or *jemisch*. In reality, there is little doubt that descriptions of this creature actually refer to some type of very large otter – perhaps unknown populations of the giant otter *Pteronura brasiliensis*, or even a still-undiscovered, related species (see p. 112).

During this century, there have been several searches for living ground sloths, including that of Hesketh Prichard – financed by the *Daily Express* and partly inspiring Sir Arthur Conan Doyle's famous novel *The Lost World* (1912), but failing to emulate the success of the latter's fictional Professor Challenger. In 1932, while leading a British Museum expedition through Yucatan and Honduras, Dr Thomas Gann briefly spied a strange animal reminiscent of a ground sloth amid some marshy territory close to the Rio Hondo border of British Honduras (now Belize) before it disappeared into the nearby forest, seemingly untroubled by the close proximity of the expedition's members and their horses.

According to Gann's description, the beast trotted on all fours like a large ape, had a sizeable body covered in thick black shaggy fur, and a head that bore a white mane obscuring its face. Similarly, I recently learned from Richard Greenwell, Secretary of the International Society of Cryptozoology, that one of his colleagues once saw a beast greatly recalling a ground sloth at a cave in Ecuador.

The malodorous mapinguary

The latest researches concerning surviving ground sloths are those of Dr David C. Oren, from Brazil's Goeldi Natural History Museum in Belém, who has spent many years investigating a monstrous beast from the Mato Grosso called the *mapinguary*.

Traditionally, this unidentified creature has been labelled by cryptozoologists as an undiscovered ape-like primate – comparable to the elusive *didi* of Guyana, and the controversial Loys's ape *Ameranthropoides loysi* photographed in 1920 by a team of Swiss geologists led by Dr François de Loys on the border of Venezuela and Colombia.

By contrast, however, Oren's researches have led him to the conclusion that the *mapinguary* is actually a modern-day *Mylodon*, with a remarkable defence mechanism so devastatingly effective that it has inspired one writer to dub this hidden creature 'the beast with the breath of hell'! During his many field trips in Brazil since 1977, Oren has learnt much from the native peoples concerning the *mapinguary*, and he believes that it exists in small numbers within westernmost Brazilian Amazonia, in the states of Amazonas and Acre.

Drawing upon more than 100 interviews conducted with alleged eyewitnesses among the local Indians and rubber tappers, Oren has obtained the following description of this cryptic beast, and in a *Goeldiana Zoologia* paper from August 1993, he painstakingly demonstrated how each of its major features is characteristic of a mylodontid ground sloth.

The *mapinguary* has reddish fur, feet that turn backwards, a miraculous invincibility to wounding from weapons (except around its navel), a monkey-like face, the height of a 6-ft-tall man when standing on its hind legs but a weight of about 500 lb, tracks that either are like those of a man but pointing backwards or are as round as a pestle or bottle bottom, a diet of bacaba palm hearts and berries, horse-like faeces, and loud vocalizations sometimes low and resembling thunder but sometimes higher and similar to a human shouting.

All fur samples of mylodontids obtained from mummified specimens have been red in colour; and, based upon reconstructions from fossil evidence, it would seem that ground sloths walked with their long claws curved towards the centre of the body – thereby yielding tracks that look as if they are pointing backwards. Mylodontids are the only ground sloths to have possessed dermal ossicles, and, as already noted, when coupled with their shield-like ribcage a near-impenetrable body armour would be the inevitable result. Only in the vicinity of the navel, below the bottom edge of the ribcage and where there are no dermal ossicles either, would a mylodontid be vulnerable to wounding.

Although the faces of ground sloths, as reconstructed from fossil remains, do not appear very monkey-like, those of tree sloths are certainly somewhat simian, and an evolved mylodontid may have acquired such characteristics too. As for the typical

image of ground sloths as huge, hulking beasts, some species were actually much smaller – indeed, the dwarf megalonychids that may still have existed upon certain Caribbean islands when the first Europeans arrived there were no larger than cats. Hence a man-sized mylodontid is perfectly plausible, and a relatively small species would obviously have a greater chance of remaining undetected by science amid the vast rainforests of Amazonia than would a larger one.

The backward-pointing tracks are consistent with those of mylodontids, and the strange round tracks could well be the impression of a mylodontid's long heavy tail tip, especially if it uses it for support when rearing up on its hind legs, as seems likely. Similarly, the *mapinguary*'s diet agrees with that of ground sloths, as do descriptions by locals of the way in which it twists palm trees to the ground in order to obtain their heart and berry-like fruits; and preserved mylodontid faeces do indeed resemble horse droppings.

Finally, after studying the extremely well-developed hyoid (throat) bones of fossil ground sloths at Florida State University, Oren felt that they were probably capable of producing loud vocalizations – thereby supporting yet again the native claims for the *mapinguary*.

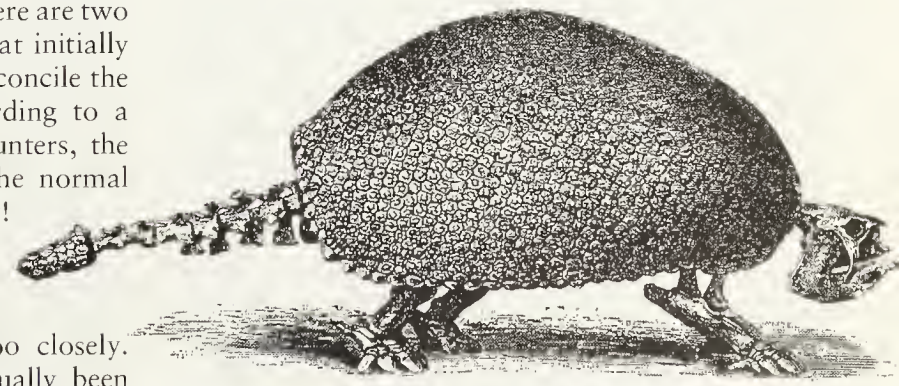
So far, Oren's identification of the *mapinguary* as a living *Mylodon* seems well founded, but there are two further details disclosed by the natives that initially posed quite a problem when seeking to reconcile the former beast with the latter one. According to a bizarre but widespread claim by local hunters, the *mapinguary* has two mouths – one in the normal location, the other in the centre of its belly! And as if that were not grotesque enough, when threatened by capture this creature releases an indescribably foul-smelling gas that asphyxiates anyone approaching too closely. Apparently, three *mapinguaries* have actually been captured by various brave hunters in recent times, but all three escaped because their captors were unable to withstand the hideous stench emitted by these animals.

Seeking to explain these anomalies, Oren suggests that the *mapinguary*'s 'belly mouth' is a specialized gas-secreting gland, whose mephitic discharge serves as an effective defence mechanism, warding off anything – or anyone – not sufficiently disheartened by its body armour to have abandoned hope of killing it.

The *mapinguary* may be the largest land mammal native to South America as well as a major 'living fossil', so its formal discovery and identification as a living ground sloth would be a sensational zoological event. It certainly seems to be one of the most likely creatures in the cryptozoological annals to be officially unveiled one day by science, especially if sought during the autumn, when it reputedly descends from the Andes – and provided, of course, that its would-be discoverer remembers to take along a very effective gas-mask!

The *minhocão* – an anomaly in armour

Until the close of the Pleistocene, the armadillos in South America and southern North America shared their world with a group of distant relatives called the glyptodonts. These resembled armadillos to a certain extent, but on a gigantic scale, measuring up to 13 ft long. Their body armour was also of colossal proportions, comprising as much as 20 per cent of these animals' entire weight. Consisting of a huge domed shell of fused polygonal bony plates on their back and with a bony covering on top of their head, it undoubtedly conferred upon these beasts a distinct similarity to an armoured tank. As for the tail, this was positively medieval; long and encircled with armour, with a mace-like, spike-bearing ball of solid bone at the tip, it was probably used in the same way as a mace – flailed at potential attackers.



Fossil skeleton of a glyptodont.

According to the fossil record, the glyptodonts died out around 10,000 years ago, but if they had lingered into the present we might expect their appearance to be sufficiently memorable for anyone spying these animals to provide a readily recognizable description. In reality, although there is evidence on file that has at one time or another offered hope to cryptozoologists that the glyptodonts are indeed still with us, the comparisons between the beasts seen and bona fide glyptodonts are of very varying quality.

The inhabitants of southern Brazil and Uruguay have often spoken of anomalous, furrow-like trenches of great depth that have suddenly appeared in the ground for no apparent reason (but often near to some sizeable lake or river), and which they claim to be the work of a mysterious serpentine creature called the *minhocão*.

It was a paper by zoologist Professor Auguste de Saint Hilaire, published by the *American Journal of Science* in 1847, that first brought the *minhocão* to western attention. Revealing that its name is derived from *minhoca* (Portuguese for earthworm) he stated:

> . . . the monster in question absolutely resembles these worms, with this difference, that it has a visible mouth; they also add, that it is black, short, and of enormous size; that it does not rise to the surface of the water, but that it causes animals to disappear by seizing them by the belly.

In his paper, de Saint Hilaire gave several instances in which horses, cattle, and other livestock had been supposedly pulled beneath the water to their doom when fording the Rio dos Piloes and Lakes Padre Aranda and Feia in Goyaz, Brazil. He believed that the *minhocão* was probably a giant version of *Lepidosiren*, the eel-like lungfish of South America.

Thirty years after de Saint Hilaire, German zoologist Dr Fritz Müller, residing in Itajahy, southern Brazil, provided further details regarding the *minhocão*, when in 1877 his account of its activities appeared in the journal *Zoologische Garten* – later to be repeated in other European publications, including the eminent English journal *Nature*. Here it was revealed that the channels excavated by the *minhocão* are so deep that the courses of entire rivers have been altered, roads and hillsides have collapsed, and orchards have fallen to the ground. It also offered some new insights into this enigmatic excavator's morphology, by way of some incidents in the region of the Rio dos Papagaios, in the province of Paranà, around the 1840s:

> A black woman going to draw water from a pool near a house one morning, according to her usual practice, found the whole pool destroyed, and saw a short distance off an animal which she described as being as big as a house moving off along the ground. The people whom she summoned to see the monster were too late, and found only traces of the animal, which had apparently plunged over a neighbouring cliff into deep water. In the same district a young man saw a huge pine suddenly overturned, when there was no wind and no one to cut it. On hastening up to discover the cause, he found the surrounding earth in movement, and an enormous worm-like black animal in the middle of it, about twenty-five metres [75 ft] long, and with two horns on its head.

In 1849, Lebino José dos Santos, a wealthy proprietor, was travelling near Arapehy in Uruguay when he learnt about a dead *minhocão* to be seen a few miles off, which had become wedged into a narrow cleft of rock and consequently died. Its skin was said to be '. . . as thick as the bark of a pine-tree, and formed of hard scales like those of an armadillo'.

And in or around 1870, one of these beasts visited the environs of Lages, Brazil:

> Francisco de Amaral Varella, when about ten kilometres distant from that town, saw lying on the bank of the Rio das Caveiras a strange animal of gigantic size, nearly one metre in thickness, not very long, and with a snout like a pig, but whether it had legs or not he could not tell. He did not dare to seize it alone, and whilst calling his neighbours to his assistance, it vanished, not without leaving palpable marks behind it in the shape of a trench as it disappeared under the earth.

In a detailed letter, published by the *Gaceta de Nicaragua* (10 March 1866), Paulino Montenegro included accounts of a similar creature from Nicaragua. Said to be covered with a skin clad in scales or plates, it '. . . is described in general as a large snake, and called "sierpe", on account of its extraordinary size, and living in chaquites [pools or ponds]'.

In his summary of this fascinating cryptozoological case, *Nature*'s editor offered two possible identities for the *minhocão*. One, echoing de Saint Hilaire, was a giant lungfish. The other, which no doubt by virtue of its more sensational appeal has attracted much more attention during subsequent years, was a living glyptodont.

I have always viewed this latter theory with more than a little scepticism, for several reasons. First and foremost, I cannot believe that anyone would liken a beast as bulky and tank-like as a glyptodont, with a domed carapace on its back, to a giant worm or snake. Anything less serpentine than a glyptodont would be hard to imagine! In contrast, *Lepidosiren* is a notably elongate, anguinine (and anguilline) beast.

Although the description of horns and upturned nose could refer to the ears and snout of a glyptodont, it could equally apply to the slender, anteriorly positioned pectoral fins of *Lepidosiren*, which also has a somewhat pig-like snout.

Another problem with the glyptodont identity arises when contemplating the emphatic burrowing

nature of the *minhocão*. It seems extremely unlikely that anything bearing such an immense amount of body armour – evidently for protection from attack by predators – would have either the need or the inclination for a fossorial mode of existence. Creatures sharing this lifestyle, such as earthworms and moles, are conspicuously devoid of body armour because they are not likely to encounter predators as frequently as if they spent their lives on the surface, and also because such armour would greatly impede burrowing activity. Fossil remains of glyptodonts provide no evidence at all for any extensive degree of underground activity. On the contrary, the excessive development of their carapace and the mace-like construction of their tail clearly imply an expectation of frequent confrontation by large surface-dwelling predators equipped with fangs and claws.

True, the comparison by some eyewitnesses of the *minhocão*'s scales to those of armadillos might seem to favour a glyptodont identity, but in reality the reverse is true. Whereas the armadillos' armour is composed of a series of rings, in the glyptodonts those rings became fused, to yield their characteristic domed carapace with its elaborate mosaic of plates that bears no resemblance to armadillo armour. As recently as the late Pleistocene, there was a group of creatures somewhat midway in form between armadillos and glyptodonts, called pampatheres. Native to South America and also the southern USA, some attained glyptodont dimensions, but their armour was of the ringed, armadillo form. Once again, however, they did not seem to be principally fossorial.

In contrast, although *Lepidosiren* lacks external scales this is a modern development, as the more primitive Australian lungfish *Neoceratodus* is profusely scaled like ancestral lungfishes. Hence the presence of scales does not exclude the *minhocão* from the lungfish category.

Even its burrowing activity is consistent with a lungfish. Like some African lungfishes (*Protopterus*), during the dry season *Lepidosiren* aestivates – i.e. it secretes a protective cocoon around itself, and remains buried in the mud at the bottom of ponds or river beds in a self-induced state of suspended animation until the rainy season begins, whereupon it breaks out of its encapsulating cocoon and swims away.

According to the *Nature* report, the *minhocão*'s deep trenches mostly appear after continued rain, and seem to start from marshes or river beds. This is just what one would expect of a giant lungfish emerging from its subterranean seclusion at the onset of the rainy season. In stark contrast, although armadillos can swim when they need to, they are not normally aquatic; the same was probably true for the armour-laden glyptodonts.

In short, although the size estimates for the *minhocão* are certainly exaggerated, taken as a whole I feel that its description is more applicable to an extremely large lungfish than to a glyptodont. I do have misgivings concerning the *minhocão*'s supposed propensity for hauling livestock down into its watery domain – this is hardly what one might expect from a lungfish, even a giant one. In reality, however, it may simply be an effect of turbulence or a type of localized vortex for which the *minhocão* is being wrongly held responsible.

There is a further identity, however, that offers an even closer correspondence to the *minhocão*, yet which has never been previously suggested – an enormous form of caecilian.

Native to the tropics of Africa, Asia, Mesoamerica, and South America, and spending virtually their entire lives burrowing underground, the caecilians are little-known limbless amphibians with outwardly segmented bodies that are extraordinarily similar in external appearance to earthworms – except for their readily visible mouth, and a pair of sensory tentacles on their head that resemble horns or ears when protruded. This description corresponds perfectly with that of the *minhocão* as penned by de Saint Hilaire. In addition, although their skin feels smooth and slimy, many caecilians do possess scales (unlike other modern-day amphibians), embedded within the skin.

The largest caecilian known to science, Colombia's *Caecilia thompsoni*, is marginally under 5 ft long. However, a giant species with well-developed scales and a capacity for excavation matching its great size would make an extremely convincing trench-gouging *minhocão*. And if its scales matched the body's external segmentation, it would resemble the ringed armour of armadillos.

South America's *Typhlonectes* caecilians inhabit rivers and lakes, so even the *minhocão*'s supposed aquatic lifestyle is not incompatible with these legless amphibians. Moreover, terrestrial caecilians often emerge above ground after heavy rainstorms – another *minhocão* feature – and they are carnivorous, and grab their prey from below. A giant species with comparable behaviour might therefore account for the reports of livestock pulled under the water when crossing rivers and lakes reputedly frequented by *minhocãos*.

All in all, the identity of a giant caecilian for the

Sketch of the glyptodont-like pendant unearthed in Panama before World War II.

minhocão provides so close a correspondence, not only morphologically but also behaviourally, that I personally see no reason for looking elsewhere for an explanation of this mysterious subterranean monster.

A second cryptozoological controversy to which the glyptodonts were linked, albeit only temporarily, began on 7 October 1967 with a short report in *Science News*. The world's largest species of modern-day armadillo is the giant armadillo *Priodontes giganteus* of eastern South America, up to 5 ft long and weighing as much as 130 lb. Although not a common species, it has never been deemed extinct. According to the *Science News* report, however, the giant armadillo had been written off as extinct by zoologists until the recent capture in Argentina of a male – one, moreover, that must have been of prodigious size. For the report gave its length as 6½ ft, and its weight as a colossal 2,200 lb – i.e. just under a ton!

Faced with such dramatic dimensions, and the fact that the true giant armadillo does not occur in Argentina, mystery beast investigator Michael J. Shields speculated whether the *Science News* beast could actually be a living glyptodont. This in turn prompted Ivan Sanderson to pursue the matter with his usual zeal through his Society for the Investigation of The Unexplained (SITU), but the truth was a great disappointment. It proved to have been a 'ninth-hand' story derived from an unknown source in Mexico's Argentinian embassy – in other words, a classic case of the Chinese whispers syndrome operating on overdrive!

Finally, in summer 1991 David H. Hinson brought to cryptozoological attention a gold and jade pendant recovered from an archaeological dig site in Panama before World War II and now housed in the University of Pennsylvania's museum. It is officially believed to represent either a crocodilian reptile or a jaguar, but Hinson drew attention to features that he likened to those of a glyptodont. These include its claws, tail, head and, of particular note, what seems to be a slightly domed carapace. Hinson pointed out that even if the glyptodonts were extinct at the time when the pendant was made (more than a millennium ago), perhaps they had survived long enough to have become incorporated in Panamanian mythology.

Like so many other examples of tantalizing iconography noted in this book, the answer will probably never be known – certainly, the beast is much more reminiscent of a carapace-bearing creature than a crocodile or jaguar, but beyond that we just cannot be sure.

Mountain tigers and sabre-toothed tigers – one and the same?

While working as a hunting guide in the West African country of Chad during the 1960s, Christian Le Noël heard tell of a mysterious striped cat of great size that reputedly inhabits the mountains of Ennedi in the north of the country, and is consequently known to the French-speaking people of this area as

the *tigre de montagne* – 'mountain tiger'. When he questioned the native Zagaoua tribe concerning it, they furnished him with several additional details. According to their description, the mountain tiger is larger than a lion and strong enough to carry off big antelopes, but lacks a tail, possesses red fur patterned with white stripes, has long hair on its feet, makes its home within the numerous caverns pitting this remote, mountainous locality, and has a pair of huge teeth that protrude from its mouth.

As with the *mokele-mbembe* and certain other African mystery beasts, reports of animals clearly equivalent to the mountain tiger are not confined to a single region of Africa. According to the Hadjeray tribe of south-western Chad, it occurs there too, and is referred to by them as the *hadjel*. Similarly, Le Noël learnt that this formidable animal is also said to frequent the Ouanda-Djailé district of the Central African Republic where, once again, it is termed the *tigre de montagne* by French-speakers, and is known to the Youlou tribe as the *coq-djingé* or *coq-ninji*. Other names given to it here include the *gassingram* and *vassoko*.

On one occasion Le Noël himself had what would seem to have been an uncomfortably close encounter with just such a creature. Accompanied by an old native game tracker, he was approaching a very large cavern in Ouanda-Djailé when suddenly they heard a terrible roar that Le Noël, despite his great experience as a hunter, could not identify. His companion, on the other hand, experienced no such problem, readily identifying its unseen owner as a mountain tiger. When pressed for details, the tracker gave him a verbal description that corresponded remarkably closely with *Machairodus* – the African sabre-toothed tiger!

Greatly surprised by this, Le Noël resolved to return the following year and, when he did, he came armed with illustrations of numerous animals, living and extinct. Without any prompting, the picture that his tracker colleague positively identified as the mountain tiger was a reconstruction of *Machairodus* – a beast that supposedly died out during the Pleistocene epoch, more than 10,000 years ago.

The most famous sabre-tooth was *Smilodon* of the New World, a huge beast with massive canines and very short tail. With the appearance of the Panamanian isthmus two million years ago, this great cat's North American homeland became linked to the former island continent of South America, so *Smilodon* migrated here too, penetrating Brazil, Peru, and as far south as Argentina. By the Pleistocene's close, it had certainly died out in the northern continent – but can we really say the same for the southern one? Some tantalizing reports on file lend faint hope to the chance that this exotic beast still survives here, undetected by science.

In his book *The Cloud Forest* (1966), traveller Peter Mathiessen noted that an itinerant seaman called Picquet described to him a rare cat frequenting the rainforests of Colombia and Ecuador that is said to be very shy, not quite as large as a jaguar, striped rather than spotted, and equipped with a pair of very large protruding teeth. Science knows of no striped species of cat native to anywhere in South America. Yet Peruvian zoologist Dr Peter Hocking has collected reports of a similar beast reputedly inhabiting hilly and lowland forests within Peru's provinces of Ucayali and Pasco. In August 1994, I learnt that he had obtained a cat skull purportedly from this unidentified felid, and an American cat specialist to whom he later showed a photo of it deemed the skull to be from a wholly new species.

An extraordinary cat initially claimed to be a bona fide *Smilodon* but later reclassified as a 'mutant jaguar' by the authorities was supposedly shot in the forests of Paraguay in 1975 and was afterwards examined by a zoologist called Juan Acavar, who was amazed by its immense canines. No details as to the ultimate fate of its corpse are known, however, and I have not succeeded in tracing the whereabouts of Acavar. So the identity of this perplexing find remains unconfirmed, just like that of so many other 'lost' cryptozoological relics.

In 1863, C.C. Blake provided the following cryptozoological appetiser:

> At Timana, in New Granada, sculptured stones have been figured by Mr Bollaert, representing a feline animal, the proportions of whose teeth slightly exceeded those of existing cats, and might possibly indicate a modified descendant of the extinct *Machairodus* [*Smilodon*] *neogaeus* of Brazil.

Smilodon populator (*neogaeus*), native to Brazil and Argentina during the Pleistocene, was bigger than a lion, and presumably preyed upon various of the very large ungulates peculiar to South America. When the prey died out, so did *S. populator*. Today, this continent has few notably large mammals – hence a contingent of *S. populator* would have great difficulty in sustaining itself. A smaller version, on the other hand, could well succeed in carving out an adequate niche, especially in relatively inaccessible, undisturbed areas, such as remote, mountainous cloud forests. Is it just a coincidence that this is precisely the type

of terrain from which reports are emerging of a mysterious, medium-sized cat with notably large fangs? Its striped pelage would provide effective camouflage in this habitat, and its shy disposition would further enable it to avoid undue human scrutiny. What more could a living fossil ask for?

It is even possible that some sabre-tooths not only survived, but also sought to expand their ecological confines, by becoming modified for a secondarily amphibious lifestyle. Certainly, there are a number of unidentified mystery beasts on record from South America that strongly recall sabre-tooths of a distinctly aquatic persuasion. The water-dwelling *yaquaru* or water tiger of Patagonia, for example, with strong tusks, shaggy yellow pelage, and savage disposition, is a creature whose lifestyle, appearance, and behaviour do not wholly correspond with either of the alternative identities previously offered for it – the jaguar, or a huge otter. Only a water-dwelling sabre-tooth can reconcile all of its characteristics.

The Guyanan *aypa*, a tiger-headed water beast with extremely large teeth, may well be of similar identity, and is probably one and the same as another Guyanan anomaly – the greatly feared *maipolina*. This fawn-coloured aquatic creature is said to inhabit riverbank caves, to measure just under 10 ft long, and to sport a pair of enormous fangs whose appearance as described by one eyewitness apparently compared to those of a walrus.

If amphibious sabre-tooths have evolved in South America, one might expect to encounter reports of similar beasts in Africa too – and such reports are, indeed, on file. A number of rivers in the Central African Republic, for instance, are reputedly home to a strange beast variously referred to as the *nze-ti-gou* ('water panther'), *mourou n'gou* ('water leopard'), *dilali* ('water lion'), and *mamaimé* ('water lion'). Zaire is supposedly home to the *simba ya mail* ('water lion'), Angola has the *coje ya menia* ('water lion'), and Kenya the *dingonek*.

Judging from these names, the creature is evidently feline in basic form, and is described as such by its native observers, but is of aquatic habitat, larger in size than terrestrial felids, and with very large, protruding fangs. Details vary a little as to its coat colour – from yellow or brown with stripes for the *mourou n'gou*, to red with stripes or spots for the *nze-ti-gou* – but such variations, if a genuine reflection of the species' morphological range (rather than erroneous documentation or translation upon the part of those recording the eyewitness accounts), are no greater than those exhibited by familiar species such as the leopard and lion. As for its large size, this can be expected for water-dwelling creatures, whose buoyancy enables them to attain much greater sizes than land-dwelling counterparts (as with whales, various pinnipeds, etc).

One of the most detailed accounts of such a beast came from adventurer John Alfred Jordan, whose book *The Elephant Stone* (1959) contains his *dingonek* sighting on the River Maggori running into Lake Victoria. According to Jordan, the creature was 15–18 ft long, with a massive head, two large fangs as thick as a walrus's tusks projecting down from its upper jaw, a broad tail, a spotted back as wide as a male hippo's, and spoor as large as that animal's too, but with long claws.

Intriguingly, Jordan stated that the *dingonek* was scaly, like an armadillo, which ostensibly rules out any affinity with a sabre-tooth. However, these 'scales' might simply be clumps of matted fur, which would resemble the genuine articles when viewed from a distance. A more radical, but less plausible, alternative is the existence of some bizarre form of scaly reptile that otherwise duplicates the appearance of an aquatic felid.

At much the same time as Jordan's sighting, another hunter spied a *dingonek* floating on a log down the Mara River (also running into Lake Victoria) while in high flood – but it quickly slid off and into the water. Near Kenya's Amala River, the Masai call it the *ol-maima* and sometimes see it lying in the sun on the sand by the riverside – but if disturbed, it slips into the water at once, submerging until only its head is visible above the surface.

As I discussed in my book *Mystery Cats of the World* (1989), the reality of water-dwelling cats is not the unlikely fusion of mutually-exclusive concepts that it may initially seem. And when beasts of such similarity to one another are reported over as great an area of Africa – with as diverse a range of human cultures and beliefs – as are the water panthers and their kin, there is clearly more than native myth and superstition at the core.

The Kamchatkan *irkuiem* – is it long in leg and short in face?

In spring 1987, amid the far north-eastern Kamchatka region of what was then the Soviet Union, hunter Rodion Sivolobov obtained the skin of a giant white bear. To most eyes it might simply look like the pelt of an oversized polar bear, but, according to Sivolobov and the area's local reindeer breeders, it is something very different – and very special. They believe it to be from a huge and extremely distinctive

species of bear still awaiting formal scientific discovery – a formidable, highly ferocious creature known as the *irkuiem*.

For 10 years, Sivolobov had been collecting reports of this creature, much rarer and twice as big as Kamchatka's notably large brown bears, with a height at the withers of 4½ ft and weighing as much as 1.5 tons. According to local testimony, the *irkuiem* has a relatively small head, short back legs, and a highly unusual running gait – throwing down its forepaws and heaving the back ones up to meet them, almost like a caterpillar! As for its luxuriant, snow-white fur, when Sivolobov succeeded in obtaining a skin he promptly sent samples from it, together with a photograph of the entire pelt, to a number of zoologists in Moscow and St Petersburg for their opinions. Inevitably, however, the general consensus was that dental and cranial samples would also be needed in order to attempt a conclusive identification of its species, so Sivolobov now plans to set forth in search of these necessary specimens.

In the meantime, he has good reason for remaining optimistic that the *irkuiem*'s eventual discovery will prove to be a major cryptozoological triumph – for, according to no less august an authority than internationally esteemed Russian zoologist Professor Nikolaj Vereshchagin, this elusive creature could well prove to be a surviving representative of one of the Pleistocene's most impressive mammalian carnivores, the short-faced bear *Arctodus simus*.

Up to 6 ft high at the shoulder and weighing as much as 2,000 lb, distributed from Alaska down as far as California on the North American continent, and also termed the bulldog bear, *Arctodus* was characterized not only by the almost feline appearance engendered by its squat face and broad muzzle, but also by its relatively short body and very long legs. The result was an uncommonly fleet-footed bear wholly unlike any species known today. Yet, despite its apparent success, the eventual extinction of the American mammoths, mastodonts, camels, horses, and other herbivorous megafauna upon which it preyed, changing climatic conditions, and encroaching competition from the brown bear all played a part in its gradual demise; 12,500 years ago, the short-faced bear supposedly died out – but did it?

During the Pleistocene, Alaska was joined via the Bering land-bridge to Siberia. In 1988, Calgary University zoologist Valerius Geist suggested that the brutal belligerence of *Arctodus* might actually have impeded primitive man's passage from the Old World into the New World via the land-bridge. However, that self-same continental connection might also have featured prominently in this bear's own movements. Could *Arctodus* have migrated across it from northern North America into eastern Asia, subsequently dying out in its original New World homeland, but persisting undetected by science amid Kamchatka's remote, harsh terrain?

If so, continued evolution may even have modified its limbs, reducing their length to yield a body shape more comparable to its chief competitor, the brown bear, but retaining its greater body size as a further means of combating the brown bear's ecological rivalry – thus producing the *irkuiem* described by the Kamchatkan reindeer breeders.

Interestingly, new findings show that even in North America the short-faced bear survived to a more recent date than traditionally believed. In March 1992, Utah palaeontologists Drs David D. Gillette and David B. Madsen documented their excavation four years earlier at central Utah's Huntington Reservoir of a partial cranium and isolated rib belonging to a short-faced bear that dated less than 11,400 BP (Before Present day) – i.e. over a thousand years more recent than the previous record for the youngest remains of this species. Moreover, they speculate that relict populations may have persisted until 10,000 years BP, or even later – beyond the Pleistocene, into historic times.

Whereas cryptozoological sceptics condemn attempts to reconcile the *irkuiem* with *Arctodus simus*, or a modified version of it, as little more than wishful thinking, Professor Vereshchagin remains convinced that the prospect holds promise:

> I personally do not in any way exclude the possibility that there is an eighth species of bear in the world today. The theory that it could be a close relative of an extinct Ice Age bear does not seem so far-fetched either.

Perhaps the next expedition by Sivolobov will confirm this opinion.

The *waheela* – great white wolf(?) of the arctic wastes

During his lifetime as a zoologist with a passionate interest in cryptozoology, Ivan T. Sanderson received numerous reports of many different mystery beasts, but few were more intriguing than those he gathered together concerning the huge, highly elusive, ghostly white 'wolves' occasionally encountered in the barren Arctic wastes of northern Alaska and Canada's Northwest Territories, and which are known to the native Indians as *waheelas*.

One of his sources of *waheela* data was a decidedly hard-headed, no-nonsense truck mechanic pseudonymously referred to by Sanderson as Frank, who had visited the Nahanni Valley in the Northwest Territories sometime during the middle of this current century. It was here, while hunting for food one day with a local Amerindian companion, that he gained firsthand experience of a *waheela*. The Amerind was attempting to flush out some likely targets from the dense forests encircling the base of a small plateau on which Frank was standing, ready to shoot anything that emerged. Eventually, something did emerge – but it was certainly not what Frank had expected.

No more than 20 paces from him was what he took at first to be an enormous snow-white wolf, roughly 3½ ft tall at the shoulder, with an unusually wide head, and sporting a luxuriant pelt of very long shaggy hair. He immediately shot at it with both barrels of his 12-gauge, loaded with birdshot and heavy ball, and felt sure that he had hit it on the left flank. However, the wolf – or whatever it was – appeared both unharmed and unalarmed, merely gazing at him for a moment before turning around and casually ambling back into the forest. When his Amerind friend turned up shortly afterwards, and learnt what had happened, he became very quiet and at first would not speak of it at all. Later, however, he confessed that he was well aware of this animal, but affirmed that it was not a wolf.

He claimed that these beasts not only were much larger than wolves, but also could be readily differentiated by their much wider heads and thicker tails, smaller ears, rather short legs, and splayed feet. They were behaviourally distinct too – hunting alone, avoiding true wolves, and functioning as scavengers rather than active predators. In addition, they may exhibit one further, and particularly sinister, difference.

Nahanni Valley is often referred to as the Headless Valley – seemingly for good reason. According to Sanderson, the Canadian mounties have on their records a number of unsolved cases featuring prospectors and other travellers who either have never returned after visiting this locality or have been found lying dead in their cabins with their heads bitten off.

This mode of dispatching humans is not typical of true wolves, nor is it so of bears – what was responsible, therefore, for their deaths? As far as his Amerind companion was concerned, the mysterious species encountered by Frank is the most likely candidate, and confirmed that, whereas in most areas they are rare, spending much of their time in the far north's tundra zone, they occur throughout the year in Nahanni Valley.

Similar stories, in which descriptions of the creatures in question tallied closely with Frank's, had already been mentioned to Sanderson by an old friend, professional cameraman Tex Zeigler, who had learnt of these animals during a trip to Alaska – which is why Sanderson had been so intrigued by Frank's wholly independent testimony. An early colonial account was later obtained by fellow cryptozoologist Loren Coleman from the historical archives of Indiana University, which featured a fatal encounter by three trappers with a *waheela* near a lake in northern Michigan. Other stories reached Sanderson's ears from elsewhere amid the forested portions of northern Canada.

What is so significant about this body of anecdotal evidence is that if such creatures genuinely exist, they may indeed prove to be something far removed from true wolves. Up to around two million years ago in North America (and even more recently elsewhere), representatives of a very unusual group of carnivores still existed. They were known as amphicyonids or bear–dogs, because their massive forms seemed to unite the most characteristic morphological features of bears and dogs – combining the burly body, short limbs, and plantigrade feet of bears with the dentition and face of wolves. In reality, however, they were neither, comprising instead a distinct taxonomic family of their own – and they would have compared very favourably in appearance with the elusive *waheela*.

The amphicyonids' eventual extinction is thought to have resulted from undue competition with other mammalian carnivores – but in the bleak, inhospitable terrain of the tundra, seldom visited by man and offering far less rivalry for prey than the more temperate regions further south, the tantalizing possibility of modern-day survival inevitably presents itself. For it is here, if anywhere on earth, that a species of amphicyonid could have persisted, undetected by science, undisturbed by man, and unchallenged by its fellow fauna.

Since Sanderson's death in 1973, the *waheela* has become one of cryptozoology's forgotten mystery beasts. Judging from the case presented here, however, the wastelands of North America possess considerable potential for ultimately hosting a sensational zoological discovery – always assuming, of course, that they can attract the attention of someone bold enough to pit himself against a creature capable of decapitating a man with a single bite.

The Nandi bear – horrific hyaena or cryptic chalicothere?

'Nandi bear' is an umbrella term that has been indiscriminately applied to all manner of mystery beasts reported from eastern Africa (especially western Kenya's Nandi district). In *On the Track of Unknown Animals* (1958), Dr Bernard Heuvelmans masterfully disentangled many of the wholly separate creatures that had been erroneously lumped together by previous Nandi bear investigators – including all-black aged ratels, aardvarks, unusually big baboons, and abnormally large and/or aberrantly coloured hyaenas (but no true bears!).

Heuvelmans suggested that the identity of those Nandi bears of baboon appearance may be a giant baboon called *Sinopithecus*, believed extinct since the Pleistocene. If so, it is a prehistoric survivor, but I am unconvinced by its candidature. As pointed out by game warden Captain Charles Pitman in his book *A Game Warden Among His Charges* (1931):

> Some of the male baboons I have seen on the Uasin Gishu Plateau have been of colossal size, capable of killing children with ease; large dogs have been almost torn to pieces, the victim held in its arms. The ape practically disembowels it with downward sweeps of its muscular nail-tipped legs. A great male baboon indistinctly seen in grass or amidst bushland might well be taken for an unknown species.

As baboons are hardly the most secretive or stealthy of creatures, if there were a species the size of a chimpanzee alive today in tropical Africa – as would be the case if *Sinopithecus* still existed – it would surely have brought itself to the attention of science long ago.

I consider it possible, however, that some of the Nandi bear reports attributed to hyaenas did not simply involve freak individuals of modern-day forms. Instead, the true explanation may feature a certain species of awesome prehistoric hyaena – a creature that would be formidable enough in appearance and ferocious enough in temperament to account for even the most terrifying reports of the infamous Nandi bear.

What Europeans call the Nandi bear has a vast range of local African names – including *chemosit* (*chimiset*), *kerit*, *koddoelo*, *gadett* (*geteit*), and *khodumodumo*. Of these, most reports concerning the first-listed seem to describe beasts belonging to the baboon category of Nandi bear, but there is one notable exception – documented in 1927 by Captain William Hichens, a local magistrate and government official based in East Africa (see also p. 18).

He had been sent to a small Nandi village to investigate the death of a 6-year-old girl who had been killed and carried off by an unidentified animal that had battered its way through the mud and lattice wall of a native hut in order to reach her. The natives claimed it to be the work of a *chimiset*, and according to the village chief it inhabited a small forest-clad kopje (boulder hill) some 5 miles away. One night not long after this, during Hichens's unsuccessful search for it, the alleged *chimiset* snatched away his own hunting dog, tethered to one of his tent's poles. In so doing, it pulled the pole away, causing the tent to collapse and envelop Hichens, which prevented him from seeing it – but he certainly heard it:

> . . . the most awful howl I have ever heard split the night. The sheer demoniac horror of it froze me still . . . I have heard half a dozen lions roaring in a stampede-chorus not twenty yards away; I have heard a maddened cow-elephant trumpeting; I have heard a trapped leopard make the silent night a rocking agony with screaming, snarling roars. But never have I heard, nor do I wish to hear again, such a howl as that of the chimiset.

A trail of blood on the sand showed where the beast had carried away Hichens's dog, and also revealed a clue as to the nature of the abductor:

> Beside that trail were huge footprints, four times as big as a man's, showing the imprint of three huge clawed toes, with trefoil marks like a lion's pad where the sole of the foot pressed down. But no lion, not even the giant nine feet four and a half inches long which fell to Getekonot, my hunter, at Ussure, ever boasted such a paw as that of the monster which had made that terrifying spoor.

These tracks led to the forested kopje, but, although other examples were found there on more than one occasion during the several days Hichens and his team spent exploring its domain's gloomy, fearful interior, the creature itself remained resolutely hidden from view.

As Heuvelmans pointed out, Hichens's description of the tracks points towards a hyaena rather than a large baboon or big cat, and there is no better candidate than a hyaena for emitting the bloodcurdling howl described above – but a hyaena of leonine proportions?

Yet such a beast could also explain certain mystery creatures documented by traveller Roger Courtney, in his book *Africa Calling* (1936). One of these animals was reputedly encountered by a white settler in the Trans-Nzoia district:

> This man, who was a teetotaller, a non-smoker, and ordinarily truthful, swore that he had been attacked one night, when he was alone in his hut, by something that could only have been a Nandi Bear. The creature broke down the door to get in at him, and was, he said, about eight feet high and like a grey polar bear. This terrible creature, its red eyes blazing and jaws slavering, went straight for the man, and a chase round the table followed. Luckily, however, the man managed to grab a revolver that was hanging on the wall and fire into the animal's chest, at which it turned and, growling horribly, made out through the doorway and off.

A second incident featured Courtney himself:

> One day, when hunting in the forest, I was shown by a palpitating game-scout a pair of very peculiar animal footmarks. They were two enormous pug marks, the size of dinner-plates, in a soft patch of ground. They were spade-shaped and turned inward. The claws must have been non-retractile, as I could distinctly see the small cuts where they had dug into the earth. The fact that they turned inward revealed a bear-like character; otherwise I would have said that they had been made by the grandfather of all hyenas. But, then, a hyena enormous enough to leave footprints as big as those would have himself been a fabulous beast.

With no evidence for bears existing in Africa, the giant hyaena identity once again arises.

Many reports of Nandi bear depredations, whether upon livestock or upon village inhabitants, feature grisly details of how it tears open its victim's head – with such force that often the top of the skull is entirely detached – and scoops out the brain to eat. In the Lumbwa area of Kenya in about 1919, one such brain-eater, which was termed a *gadett* by the locals, was supposedly hunted down and killed – whereupon it was found to be an unusually large specimen of the spotted hyaena *Crocuta crocuta*. There is no proof, however, that this beast was genuinely the *gadett* – and sceptics have suggested that hyaenas, unlike baboons, would be unlikely to carry out the type of assault laid at the *gadett*'s deviant door.

According to Pitman, however, such activity is far from unknown in hyaenas:

> Such injuries to human victims as scalping and crushed skulls are often cited as resembling the work of a bear. It is true that bears often thus mutilate their victims, but to assign these injuries to some strange bear-like animal is to betray ignorance of hyena habit. Bold and hungry hyenas often maim horribly porters sleeping in the open or natives in flimsy huts, and it is curious that in the majority of cases the head is selected for attack – dozens of cases could be quoted of scalping, skulls crushed, and faces literally torn off by spotted hyenas.

Around 1957–8, Douglas Hutton, the manager of Chemomi Tea Estate in the Nandi district, shot two specimens of a strange, still unidentified species and sent their carcasses to the tea factory, where several members of staff viewed them. During the early 1980s, Nairobi-based naturalist Dr G.R. Cunningham van Someren interviewed three of these eyewitnesses independently and received detailed, largely consistent descriptions. Standing almost 3 ft high at the shoulders, which bore a heavy mane of long hair, the creatures had broad, short heads with small ears, broad chests, rearward-sloping backs that emphasized their long heavy forelegs and shorter hind legs, and short tails. Only when enquiries were made as to the colour of their fur was there any noticeable disagreement between the trio of eyewitnesses – two claimed that it was grey-brown with light tips, the third stated that it bore black spots on a lighter background colour. None had ever seen such animals before.

The creatures' skeletons had been left in the bush to be cleared by ants, after which Hutton sent them to Nairobi Museum for examination. In the report that he later received, their identity had been given, somewhat enigmatically, as a 'giant forest hyaena'.

In 1962, the father of Nandi-born white hunter Jamie McLeod shot a creature that McLeod has since seen for himself, and which he, too, referred to as a giant forest hyaena. According to his description, it is twice the size of the spotted hyaena, with long shaggy brown hair that tends to be very dirty on its belly, a lion-sized head, large carnivorous teeth, and a sloping back (though not as pronounced as the spotted hyaena's).

At the end of July 1981, Ken Archer, General Manager of Eastern Produce Company, was informed that farmers working on plots of land on the Nandi Escarpment road from Chemilil to Nandi had sighted a mysterious animal that they were unable to identify. On 12 August, he and van Someren visited the farmers to ascertain the animal's appearance, and discovered from the vivid description given by one of the observers that it matched that of the beasts shot by Hutton back in the late 1950s. He denied emphatically that it had been a baboon or a pig, and did not think that it was a spotted hyaena either.

From such reports as these, I too consider it unlikely that 'giant forest hyaenas' of the type documented here are spotted hyaenas. Occurring throughout eastern Africa south of the Sahara, this latter creature is the largest of the three modern-day species of hyaena, weighing as much as 120 lb, with a total length of up to 7 ft in exceptional specimens, and a shoulder height sometimes reaching 3 ft. Yet these still fall well short of the dimensions required by any hyaena seeking to assume the role of the beasts reported in this section.

As for the long, shaggy, drab-coloured fur usually ascribed to them, this is much more reminiscent of another modern-day species, the brown hyaena *Hyaena brunnea*. A little-known nocturnal species inhabiting the plains, savannahs, and even the seashores of southern Africa, it can come as something of a surprise even to the natives, let alone westerners – and can be quite ferocious if threatened. In terms of size, however, the brown hyaena is much smaller than the spotted hyaena, but if a gigantic version existed it could make an extremely convincing giant forest hyaena – which is why I am so intrigued by the fact that, not very long ago, just such a creature did indeed exist.

A short-faced shocker from the Pleistocene

The species in question was *Hyaena brevirostris*, the short-faced hyaena – named after its abrupt, bear-like muzzle – which inhabited not only Africa but also Europe and Asia during the Pleistocene. Although basically hyaenid in outline, its dimensions were those of a lion, and its canine teeth were enormous. Moreover, unlike modern-day hyaenas, this huge species was a much more active predator, less dependent upon carrion-feeding and scavenging – and the sight of one of these creatures hunting must have been awe-inspiring in the extreme. As noted by palaeontologist Professor Bjorn Kurten in his *Pleistocene Mammals of Europe* (1968):

> Anybody who has seen an angry, snarling brown hyena with its big shaggy mane on end will appreciate what a terrifying apparition its gigantic extinct ally must have been to the primitive men of its day.

It was in a recent *Fortean Times* article (February 1993) that I introduced the hypothesis that some Nandi bear reports could be convincingly explained by the undiscovered contemporary survival of the short-faced hyaena – and in both appearance and behaviour this ferocious, immensely powerful species of enormous size undeniably provides a much closer comparison to those animals categorized as giant hyaenas than does any other creature from either the present or the past.

Nor can there be any mystery why the Nandi bear is so greatly feared if the short-faced hyaena does indeed still survive. The concept of a creature as large as a lion, equipped with the brutal strength and crushing jaws of a hyaena, and functioning not as a skulking scavenger but as an active predator is too hideous to contemplate even from the safety of an armchair in England, let alone amid the primeval darkness of the Nandi forests.

Early photo of brown hyaena – can a giant relative from prehistory explain certain Nandi bear reports?

The chalicothere connection

In 1923, a discovery was made in Central Africa that spawned what must surely be the most unusual but also the most intriguing of all Nandi bear identities currently on offer. This was when E.J. Wayland, director of the Geological Survey of Uganda, sent to the British Museum a small collection of fossils lately disinterred from the vicinity of Albert Nyanza. Among these were some fragments that British Museum palaeontologist Dr Charles W. Andrews at once recognized to be from a remarkable creature known as a chalicothere.

The chalicotheres were among the most curious of all fossil mammals. Taxonomically, they were perissodactyls – members of the odd-toed order of ungulates, which also contains the horses, rhinoceroses, tapirs, and the extinct titanotheres (see p. 164). Much of their cranial and skeletal features were similar to those of the horses – with one major exception, their limbs. The forelimbs of chalicotheres

were notably longer than their hind limbs, yielding a hyaena-like, rearward-sloping back. Most extraordinary of all, however, were their feet – for, despite being hoofed mammals in the strict taxonomic sense, chalicotheres had large, cat-like retractile claws instead!

The purpose of such highly unexpected accoutrements has never been satisfactorily explained, but the most popular theory is that these herbivorous browsers used them for digging up roots and for pulling down tree branches.

Reconstruction of Moropus, *an American chalicothere – could there be a living species awaiting discovery in East Africa? (Brian Regal/Tarbosaurus Studios)*

Chalicotheres were already known from fossils found in North America (including *Moropus*, the most familiar genus), Asia, and Europe, but Wayland's were the first recorded from Africa. They were also the most recent, geologically – whereas those from elsewhere were mostly pre-Pleistocene, these African remains dated from the late Pleistocene.

The okapi's sensational discovery in 1901 remained uppermost in the minds of zoologists (especially those associated with Africa) for many years afterwards. In the case of Andrews, its impact sparked off a highly thought-provoking line of speculation when considering in 1923 the novelty of the chalicothere's one-time, and relatively recent, existence in Africa:

> The finding of a Chalicothere in Central Africa is of especial interest because a species occurs [i.e. in fossil form] in Samos associated with Samotherium, which is very closely similar to the Okapi, the discovery of which a few years ago attracted so much attention. It seems just possible that a Chalicothere may still survive in the same region and may be the basis of the persistent rumours of the existence of a large bear- or hyaena-like animal . . . the 'Nandi Bear', stories of which are constantly cropping up. Whatever it may turn out to be, the beast seems to be nocturnal in its habits and to resemble a very large hyaena, an animal in which the proportions of the fore and hind limbs are much as in some Chalicotheres.

Unlike so many other cryptozoological proposals, the chalicothere connection evidently has appeal for even the most traditionally minded of zoologists, because it has since surfaced not only in cryptozoological works but also in several mainstream zoological publications. For instance, the eminent anthropologist Professor Louis Leakey referred to the subject in an *Illustrated London News* article for 2 November 1935 entitled 'Does the Chalicothere – Contemporary of the Okapi – Still Survive?'. His palaeontological work at Olduvai had disproved earlier speculation from sceptics that Wayland's chalicothere remains were derived fossils (i.e. fossils from older deposits that had somehow become re-embedded in a younger fossil bed), because chalicothere fossils unequivocally contemporary with those of late Pleistocene humans had been unearthed here too. Accordingly, in his account Leakey reiterated the possible synonymity of the Nandi bear with a species of living chalicothere.

A few years earlier, in *A Game Warden Among His Charges* (1931), Charles Pitman had also examined the chalicothere's candidature as a Nandi bear – and provided what could well be a very perspicacious explanation for the paucity of modern-day Nandi bear reports:

The fact of its being an ungulate has proved of the

> utmost importance in connection with certain evidence acquired in the course of investigations to ascertain whether there was any reasonable foundation for the stories of the Nandi bear; and if so what the chances were of its existence at the present day. If not, was it possible that the species became extinct only recently? Now, the Nandis and allied tribes . . . assert that the Nandi bear was never plentiful; but, prior to the devastating rinderpest epizootic which swept through the whole of Africa at the close of the nineteenth century, practically exterminating the buffaloes, it was not uncommon. The species is said to have suffered so terribly from the ravages of the malady that it was reduced to the verge of extinction, and has never recovered. This story has often been cited as proof positive of the absurdity of the Nandis' tales. How, the sceptics ask, could a carnivorous beast suffer from rinderpest? But, if the Nandi bear is connected with the presumably extinct *Chalicothere* I see no reason why it should not have been susceptible to the disease in common with the majority of the ungulates.

In *On the Track of Unknown Animals* (1958), Dr Bernard Heuvelmans pointed out that although a living chalicothere may well *resemble* the hyaena-like creatures described by Nandi bear eyewitnesses, a herbivorous animal could not be responsible for their bloodthirsty onslaughts – which he blamed upon spotted hyaenas. In short, genuine hyaenas (or at least carnivorous beasts of hyaena-like appearance) were carrying out the attacks attributed to the Nandi bear, but a chalicothere might also be sufficiently hyaena-like in superficial, external form for eyewitnesses encountering one to believe that they had seen a Nandi bear.

As revealed in the quote from *Nature* which opens this chapter, the involvement of the chalicothere, however innocuously, in the Nandi bear saga gained further credibility in 1975 when palaeontologist Dr Martin Pickford from London University's Queen Mary College told that, after finding some chalicothere fossils within the Lukeino Formation in Kenya's Baringo district and describing its likely appearance in life to his native field assistant Kiptalam Chepboi, he had been assured by Chepboi that this was an accurate description of the *chemosit* – an opinion reinforced by other natives to whom he gave the same description. Pickford, unlike Heuvelmans, Leakey, and Andrews, doubted the chalicothere was still alive today – but conceded that it may have survived until the recent past, entering local mythology to yield tales of the *chemosit* before finally dying out.

In his authoritative palaeontological tome, *Mammal Evolution* (1986), Professor Robert J.G. Savage offered a more optimistic opinion on the matter:

> Periodically come reports from the Kakamega forests in Kenya of sightings of the Nandi bear. The beast is described as having a gorilla-like stance with forelimbs longer than the hind, with clawed feet like a bear and with a horse-like face. Could the beast be a survivor of the chalicothere, thought to have become extinct in East Africa during the Pleistocene? The description above would fit with the skeletal remains of these extraordinary animals.

The same view was aired in the *Macmillan Illustrated Encyclopedia of Dinosaurs and Prehistoric Animals* (1988), a multi-authored volume with Professor Savage as a consultant.

A second source of evidence implying recent chalicothere survival was revealed by Brown University ungulate specialist Professor Christine Janis, who not only supports the likelihood of a chalicothere component within the multi-faceted Nandi bear identity, but also has amassed some diverse and stimulating iconographical corroboration for the late survival elsewhere of several different types of ungulate officially believed to have died out much earlier.

These include two gold belt plaques from the frozen tombs of Siberia's Sakik culture (500–400 BC), in the collection of Peter the Great in the Hermitage, St Petersburg (formerly Leningrad). Each plaque (12 cm long, 7.4 cm wide, 173 g in weight) depicts an odd beast referred to in the collection as a 'fabulous wolf-like animal'. As Janis recognized, however, its head and body are more equine than lupine (even sporting a horse-like mane), which, when combined with its clawed feet, yield a surprisingly chalicotherian appearance. True, they may simply be stylized wolves, but, as she also pointed out, other plaques in this collection depict animals that are readily identifiable as canids. So if these two creatures really are wolves, why should they alone have been portrayed in stylized form?

(Eastern tombs, incidentally, appear to be good sources of cryptozoological material. In 1991, Dr Nikolai Spassov from Bulgaria's National Museum of Natural History documented two silver plaques recovered from some 1st Century BC tombs in northern Mongolia that portray the unmistakable form of the musk-ox *Ovibos moschatus* – a species still surviving today in North America but believed extinct in the Old World since the Pleistocene.)

Finally, there is one aspect relating to the possible connection between the Nandi bear and a surviving species of chalicothere that does not appear to have been considered before. Just because chalicotheres are herbivorous, there is no reason to suppose that they are incapable of exhibiting belligerent behaviour. Anyone who has encountered a bull elephant on the rampage, a maddened hippopotamus, or a charging Cape buffalo will readily confirm that an abstinence from meat consumption does not guarantee an absence of aggression! Perhaps the most dramatic examples are the South American peccaries. Anatomically, there is nothing to indicate a pugnacious personality, but the vitriolic savagery of these modest-sized pig-like ungulates is renowned throughout their distribution range.

What if chalicotheres were not as placid as palaeontology has painted them? A creature the size of a cow liberally armed with sharp, curving claws would certainly make a formidable assailant if roused, or if habitually temperamental – it might even be a veritable Nandi bear.

A herd of hoofed mystery beasts

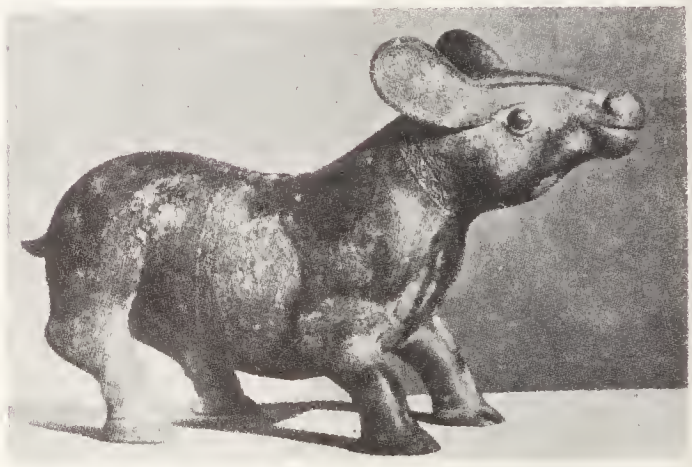
As I recently revealed in a major three-part article published by *Strange Magazine*, in addition to chalicothere considerations the zoological literature contains numerous unresolved cases regarding other unexpected forms of 'crypto-ungulate'. Among these cases are several dealing with controversial creatures that may well be unrecognized prehistoric survivors – including the following selection.

A giant hyrax and the beasts of bronze

Sometimes, evidence in support of prehistoric survival can appear in the most unlikely places. On 30 November 1935, *The Field* published an article by F. Martin Duncan entitled 'A Chinese Noah's Ark', which surveyed a selection of Chinese works of art from an exhibition that was being staged by London's Royal Academy. Duncan's article included photos of several exhibits, one of which was a bronze sculpture of an exceedingly strange animal.

The sculpture was owned by H.J. Oppenheim and, as can be seen here, the creature that it portrays bears little resemblance to any modern-day species – which presumably explains why it was referred to in the exhibition as a mythical animal. Overlooked by cryptozoology, however, the bronze was soon forgotten beyond the perimeters of the art world.

During the early 1980s, however, an article in the magazine *Smithsonian* concerning the Warring States period in China (480–222 BC) included a photo of a near-identical bronze statuette. It was one of 151 items in an exhibition of Chinese art from that period on display at the Smithsonian Institution's Freer Gallery of Art. Several of these statuettes had been found in 1923 near the village of Li-yu, in the Shanxi province.



One of the bronze statuettes depicting a beast resembling a giant Pliocene hyrax.

This time, the animal was called a 'fanciful tapir-like beast', with the comment that it seemed to have no practical or ritual function. Not long afterwards, Janis serendipitously came upon the article while browsing through some magazines in her doctor's waiting room! (And I have since sent her a copy of the photo from *The Field* article.) She had no problem in classifying its mysterious 'tapir' – due not only to her specialized knowledge of ungulates, but also to the fact that she had actually kept smaller versions as pets.

The beast of the bronzes was a hyrax – one of those superficially rabbit-like creatures also termed conies, but supplied with small hooves and an anatomy that unmasks them as diminutive relatives of the proboscideans (elephants, mammoths, and mastodonts). This particular example, however, appeared to be far from diminutive. Indeed, as she later explained (*Cryptozoology*, 1987), Janis became convinced that it was meant to represent a certain giant form of hyrax from China's late Pliocene (and possibly early Pleistocene too), a pig-sized creature called *Pliohyrax*. If so, then this animal must have persisted into historic times.

The head of the bronze beasts closely compares to those of modern-day species of hyrax – and so did that of *Pliohyrax*. In contrast, their body is hippo-like – but although no post-cranial remains of *Pliohyrax*

are known, Janis notes that the high position of the eye sockets in its skull (comparable to those of the hippopotamus) indicates that it might have been semi-aquatic like the hippo. It may therefore have possessed a similar body shape too, as fossil ungulates with hippo-shaped bodies tend to have these elevated eyes.

Nevertheless, there was one notable problem when attempting to reconcile the bronze beasts with any type of hyrax – whereas the latter have several hooves on each foot, the feet of the bronze beasts have only one hoof apiece. Janis, however, has proposed that this discrepancy indicates that the animal was one known from mythology rather than one personally seen by the sculptor. Presumably, therefore, the giant hyrax had indeed survived long beyond the Pliocene, and had once been well known to mankind in China, becoming incorporated into their mythology, but had died out prior to the Warring States period.

There is, however, a possible alternative, as proffered once again by Janis. A hyrax the size of *Pliohyrax* would be much heavier than today's notably smaller species, and may therefore have evolved a more compact type of foot structure with a pad underlying the foot – resembling the feet of pigs and hippos. Perhaps this is what the sculptor was attempting to convey when producing the bronze statuettes – hence *Pliohyrax* may have lingered into the Warring States period after all. As there is no evidence of its survival today, however, we must assume that it subsequently became extinct – or perhaps, like many other large, sluggish, inoffensive beasts with succulent flesh, it was exterminated by hunters.

Miniature mammoths, and memories of mastodonts

Few cryptozoological subjects exude such an air of romantic wonder as the notion that a few woolly mammoths and hairy mastodonts may still be lurking unknown to science amid the remote backwaters of the modern world – which makes it all the more poignant that few such subjects are based upon so insubstantial and equivocal a body of evidence.

In the case of woolly mammoths *Mammuthus primigenius* surviving in Siberia, there is little doubt at all that most such reports actually originated from sightings of preserved, frozen mammoths by peasants so frightened by what they had seen that they never realized the truth – that the creatures were dead, and had been so for many millenia.

The only example that I find at all convincing is the oft-quoted story that in 1920, M. Gallon, the French consul at Vladivostok, learnt from an old Russian hunter of how in 1918 he had spent several days following a trail of huge round footprints in Siberia's vast taiga forest, until at last he came upon the animals responsible – which he described as a pair of huge elephants covered in dark chestnut hair, and with large, very curved, white tusks.

What is interesting about this particular account is that the hunter described seeing them in a forest rather than on the barren ice plains traditionally deemed to be this species' true habitat. Soviet scientists ultimately proved that in reality the woolly mammoths had inhabited forests rather than tundra – but this was many years after the hunter's claim. So perhaps his story of encountering living mammoths in the taiga really was genuine – after all, a forest covering over three million square miles would have no problem sheltering a veritable multitude of mammoths from scientific scrutiny, let alone a single pair!

Certain other accounts, sadly, are somewhat less believable. In 1873, Edward Newman cautiously published a report in *The Zoologist* of how a Russian escaped convict called Cheriton Batchmatchnik had allegedly chanced upon a herd of living mammoths within a cave in the Aldan mountains. This would have been dramatic enough in itself, but the climax to his tale was an outrageously improbable confrontation between one of the mammoths and an equally implausible lake-dwelling reptile that Batchmatchnik described as a type of crocodile-serpent, 30 ft long, scaly, and armed with huge fangs, which attempted to crush the mammoth within its powerful coils for over an hour before its victim succeeded in breaking free and escaping. As even the famed fecundity of reptilian evolution has yet to engender a constricting, serpentine crocodile (or a constricting, crocodilian serpent either, for that matter!), I see little point in examining this particular episode any further.

Ironically, it is the fossil record, traditionally the scourge of cryptozoology, which provides this fledgeling science with its greatest hope for the reality of undiscovered modern-day mammoths. This species was universally believed to have died out around 11,000 years ago – until 1993, that is, when Dr Sergey Vartanyan from Russia's Wrangel Island State Reserve and two fellow researchers made an astounding disclosure.

They had discovered fossilized remains revealing that as recently as 3000 BC (i.e. the time of the building of the Egyptian pyramids), mammoths still existed on Wrangel Island – sited off the coast of north-eastern Siberia in the Arctic Ocean. These, however, were no ordinary mammoths; like many island forms, they comprised a miniature, dwarf race, only around

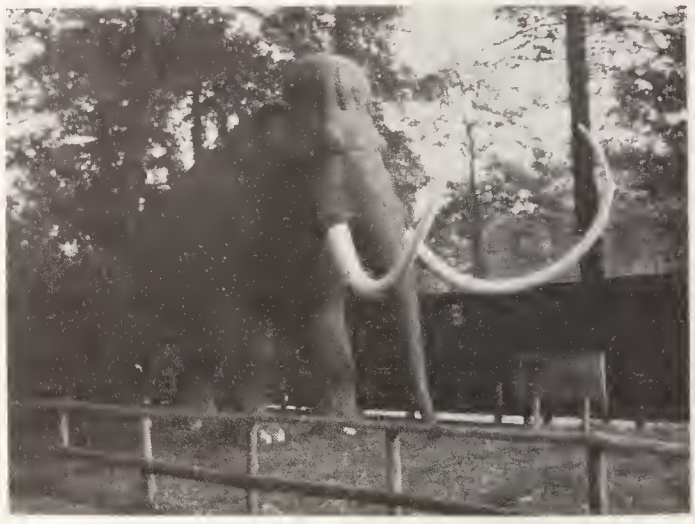
6 ft high instead of almost 11 ft. This discovery was so revolutionary that some other researchers initially disputed the accuracy of the fossils' dating, but the Wrangel trio conducted further tests that verified their claim. These mini-mammoths had survived long after their full-sized relatives had vanished probably because Wrangel boasts a high diversity of plant life, and not until three thousand years ago did man the hunter first reach it. This in turn begs the question of whether in a forest as immense as the taiga, some normal mammoths may indeed have successfully eluded extermination by man.

Speaking of mini-mammoths contemporary with the Egyptian pyramids, in a *Nature* letter for 2 June 1994, Baruch Rosen described a scene painted in a pharaonic tomb depicting a small elephant-like beast closer in appearance to a diminutive mammoth than either to a young Asian or African elephant or to the taxonomically controversial pygmy elephant of Central Africa. Recent researches have suggested that dwarf mammoths may have survived into the Pleistocene on certain Mediterranean islands (also home to the extinct dwarf elephant *Elephas falconeri*). Could they have persisted beyond the Pleistocene, however, like the Wrangel version? If so, perhaps the depicted creature was a miniature Mediterranean mammoth, which had been captured and transported to Egypt.

Whereas mammoths were closely related to modern-day elephants (especially the Asian species), mastodonts comprised a totally separate family – whose best-known species, the 10-ft-tall North American mastodont *Mammut americanum*, was characterized by a long head, lengthy upward-curving tusks, and a hairy coat. Officially, this species died out around 9,000 years ago, contemporary only with early man, not modern man. Over the years, however, various items of evidence ostensibly contradicting this view have been put forward.

There are some curious Amerindian legends that tell of huge beasts that might be mastodonts (or even *Mammuthus jeffersoni*, America's last mammoth, which officially died out just under 11,000 years ago). For example, the legends of northern Labrador's Naskapi Indians tell of the former existence of a formidable monster called the *katcheetohuskw* – said to be very large, with a big head and ears, big teeth, a very long nose with which it hit people, stiff rigid legs, and tracks in the snow that were deep and round. One Indian, shown pictures of an elephant, identified it as this beast. Some ethnologists, however, claim that its name is correctly translated as 'stiff-legged bear', despite its lengthy, nasal weapon.

Another story, from the legends of Maine's Penobscot Indians, speaks of giant monsters with long teeth that slept at night by leaning against trees – just like elephants. And the Algonkian myths tell of an immense, extinct creature with an extra arm, growing out of its shoulder – traditionalists identify this animal as a moose, despite its surprising accessory.



Do woolly mammoths linger on amid the vast Siberian taiga? (Dr Karl P.N. Shuker/reproduction courtesy of Drayton Manor Park & Zoo)

Yet even if these various tales were indeed based upon mastodonts (or mammoths), they provide no evidence for their modern-day survival, as the creatures are always spoken of as long-vanished. As suggested in 1980 by George Lankford, they are most probably preserved folk memories dating back to late Pleistocene times, when early man was contemporary with the last members of North America's mammalian megafauna.

Nevertheless, there are also on record a few claimed sightings of living mastodonts in modern times. The most famous of these featured British sailor David Ingram and his alleged trek with two companions from the Gulf of Mexico to the St Lawrence River in 1568. During this epic journey, the trio claim to have spied elephant-like beasts with huge tusks. A number of 'hairy elephant' sightings surfaced during the late 1800s too, emanating from northern Canada and Alaska, but were never confirmed.

Other claims for mastodont survival involve certain ceremonial mounds and their contents. There is, for instance, one such mound in Wisconsin whose shape is distinctly elephantine – based, perhaps, upon sightings of post-Pleistocene mastodonts? A more conservative theory holds that it was originally a bear,

but flooding or some other natural phenomenon added a trunk-like extension to its anterior portion.

Even more deceptive is the highly controversial 'elephant pipe', found in one of Iowa's famous Davenport mounds during the 1800s. A beautifully carved pipe bowl unequivocally depicting an elephant, it was originally identified as a mastodont portrayal, but later dismissed as a fake. As Professor H. Barry Fell noted in his *America B.C.* (1982), however, it was actually an artefact inspired by the African elephant, and created by pre-Columbian settlers from Libya. A vast quantity of Libyan iconography and stone-engraved script is now known from the New World, including South America, where some elegant depictions of elephants were again formerly deemed by some to provide proof that mastodonts survived into the recent past.

In short, therefore, it is cryptozoologically disappointing but archaeologically clear that there is currently no convincing evidence to indicate the modern-day survival of any proboscideans in the New World – only indications that if early man had not been so successful a hunter, the endless plains and forests of the great American West may have been home not only to bison, deer, and antelope but to more than a few 'hairy elephants' too.

A final mastodont-related oddity features the magnificent stupa at Båråboedaer, near Jakarta, on the south-east Asian island of Java, which was built by migrants from India around 800 AD. In 1939, Michigan University geologist Dr E.C. Case brought to attention the intriguing fact that some of the water spouts at the tips of this spectacular terraced temple's conduits take the traditional form of a mythical monster called the *makara*, but, unique to this particular monument, possess carved teeth that are typically mastodont, both in form and in number (and hence very different from those of the Asian elephant).

In explanation of this anomaly, Case suggested that the water spouts' model may have been a fossil mastodont skull, perhaps preserved as a temple exhibit. Tellingly, however, he also opined: 'The possibility that the Mastodon survived in some remote locality until the ancestors of the builders of Båråboedaer saw it and preserved an account of it in legend is not too fantastic to be considered.' It would not be the first time that depictions of an ostensibly fabulous beast were, in reality, based upon an animal undetected by science.

In the wake of the water elephant

What may be the most sensational example of a proboscidean prehistoric survivor – inasmuch as this one could still exist even today, yet still be eluding scientific discovery – made its western debut in 1912, courtesy of an article by R.J. Cuninghame that appeared in the *Journal of the East Africa and Uganda Natural History Society*. In this, he referred to a Mr Le Petit, lately returned to Nairobi following five years of travelling within the French Congo – during which period he claimed to have twice encountered an extraordinary animal known to the Babuma natives as the *ndgoko na maiji*, or water elephant.

His first sighting, which occurred around June 1907 while journeying down the River Congo near the River Kassai's junction with it, was brief and featured only a single animal – seen swimming with head and neck above the water surface at a considerable distance away.

In contrast, his second encounter featured five specimens seen close by, on land. This took place in an area nowadays situated within the borders of Zaire, i.e. the swampy country between Lake Leopold II (since renamed Lake Mai-Ndombe) and Lake Tumba, near to where the M'fini River finds its exit from the first of these lakes. After viewing the animals through binoculars while they stood about 400 yards away amid some tall grass, he shot one of them in the shoulder, but his native companions were unable to recover its body for him.

Le Petit described the water elephants as 6–8 ft tall at the shoulder, with relatively short legs whose feet had four toes apiece, a curved back, a smooth shiny skin like that of a hippo's, hairless but darker, an elongate neck about twice the length of the African elephant's, plus ears that were similar in shape to those of that species but smaller in size. Most distinctive of all was its head, which was conspicuously long and ovoid in shape, which, together with its short, 2-ft-long trunk and lack of tusks, resembled that of a giant tapir.

According to the natives, the water elephant spends the daytime in deep water (where it is greatly feared by them, as it will sometimes rise upwards unexpectedly and capsize their canoes with its efficient, if abbreviated, trunk). Only at night does it emerge on to land, where it grazes upon rank grass. It is also very destructive to their nets and reed fish traps, but is not a common species, and its distribution range is very restricted. Confirming the natives' testimony, the five specimens under observation by Le Petit finally disappeared into deep water, and were not seen by him again.

If Le Petit's detailed description is accurate, the water elephant does not belong to either of today's

known species of elephant. It has been likened by some to the deinotheres, an extinct proboscidean lineage whose members' diagnostic feature was a downward-curving lower jaw bearing a pair of long recurved tusks. The last known species survived until the late Pleistocene in Africa. The water elephant, however, bears little resemblance to these long-limbed forms with their curious lower jaw and tusks.

To my mind, it is much more similar to some of the most primitive proboscideans, such as *Phiomia* from Egypt's Oligocene, or even *Moeritherium* itself – the tiny tapir-like 'dawn elephant' from the late Eocene and early Oligocene, whose fossils are known from Egypt, Mali, and Senegal, and which is at the very base of the proboscidean evolutionary tree. Believed to have been a partially aquatic swamp-dweller on account of its eyes' high, hippo-like position, if this beast had given rise to a dynasty of descendants that had become much larger but had retained their ancestor's lifestyle and its attendant morphological attributes, the result would most likely be an animal greatly resembling the Congolese water elephant.

The concept of such a beast persisting unknown to science in the 1990s may not find favour among many scientists, but the Congo region of tropical Africa has already unveiled more than enough major zoological surprises so far this century for anyone with a knowledge of these things to hesitate before discounting such a possibility entirely out of hand.

Tapirs in Borneo?

Of the four modern-day species of tapir, three occur only in the New World and are uniformly dark brown in colour, whereas the fourth, the Malayan tapir *Tapirus indicus*, is an Old World speciality and is further differentiated by virtue of its 'saddle' – an area of striking white fur encompassing much of its torso and haunches. Already known to exist in Malaya, Burma, Thailand, and Sumatra, there is a good chance that this species' current distribution extends even further afield – on to the island of Borneo, where it supposedly died out several millennia ago.

Over the years, a number of unconfirmed reports of tapirs existing in this extremely large yet little-explored tropical island have been briefly documented in the literature, but these have incited conflicting opinions. Whereas, for instance, L.F. de Beaufort included Borneo within the accepted distribution range for *T. indicus*, Eric Mjöberg adopted a more circumspect stance, stating: 'It is not yet certain that the tapir has been met with in Borneo, although there are persistent reports that an animal of its size and appearance exists in the interior of the country.' In 1949, however, Dr Tom Harrisson, then Curator of the Sarawak Museum, reported that tapirs were spied in Brunei on two separate occasions some years earlier by Brunei resident E.E.F. Pretty, and he believed that the existence of such creatures in Borneo might yet be officially confirmed. Curiously, the Malayan tapir has been featured on a postage stamp in a series issued by Sabah (formerly North Borneo) that depicted species of animals supposedly native to this island. Wishful thinking perhaps – or an affirmation of reliable local knowledge that deserves formal acceptance by science?

When investigating the pedigree of any cryptozoological creature, we must always consider the possibility that the eyewitness reports ostensibly substantiating its existence are in truth nothing more than misidentifications of one or more species already known to science. In the case of Borneo's tapir, however, there is only one such species with which it might be confused – the bearded pig *Sus barbatus*. This beast possesses not only a long snout, but also a distinctly pale 'saddle' over its back and haunches. Even so, with a total head-and-body length of 3½–5½ ft, a body height not exceeding 3 ft, and a weight of 330 lb, it falls far short of the Malayan tapir's stature – as the latter's head-and-body length can exceed 8 ft, its shoulder height can reach 3½ ft, and its weight can be as much as 800 lb. Nor could the bearded pig be mistaken for immature tapirs that have not attained their full size – because, just like those of the three American species, juvenile Malayan tapirs are striped, only acquiring their characteristic white-backed, unstriped appearance when adult.

In short, the bearded pig cannot be contemplated as the likely identity of supposed tapirs in Borneo, but it does offer one item of interest. Its distribution corresponds almost precisely with that of the Malayan tapir, except for one major difference – the bearded pig is *known* to exist on Borneo. Yet until the Pleistocene's close, the Malayan tapir was known to occur here too (thereby greatly reducing the likelihood that any tapir living on this island today could belong to an *unknown* species). If the bearded pig could persist into the present day on Borneo, why not the tapir too? The island is more than sufficiently spacious to house a very respectable number of tapirs, and their ecological requirements are more than adequately catered for. Indeed, the *absence* of the Malayan tapir from Borneo is really far more of a mystery than its disputed *existence* there!

Ironically, it is very likely that the Malayan tapir's modern-day occurrence in Borneo would have been fully verified by now had it not been for an appalling

instance of investigative apathy on the part of the scientific community not so long ago, which led to the disappearance of what seems to have been conclusive evidence for this species' persistence there. In November 1975, as recorded soon afterwards by Jan-Ove Sundberg in *Pursuit*, the Antara News Agency of Indonesia reported the capture in Kalimantan (Indonesian Borneo) of an extraordinary creature that appeared (at least from the description given of it) to be an impossible hybrid of several radically different types of animal.

According to the report (and always assuming, of course, that this entire episode was not a fabrication or a dramatic distortion of some much more commonplace event), the captured creature's body was similar to that of a tiger, its neck resembled that of a lion, it had an elephant-like trunk and the ears of a cow, its legs recalled those of a goat but its feet had chicken-like claws, and it reputedly sported a goatee beard like a billy goat's. Emphasizing its composite appearance, the news agency referred to this amalgamated animal as a 'tigelboat' – a portmanteau word presumably derived from 'TIGEr', 'Lion', 'Bird', and 'gOAT'.

In spite of its bizarre appearance (or because of it?), the 'tigelboat' apparently failed to elicit any interest from scientists – which is a tragedy. If only someone had taken the trouble to analyse its description methodically, a major zoological discovery might well have been made – for as I have recently shown, when considered carefully it can be readily translated to reveal a creature that can after all be identified.

Let us examine the features of the 'tigelboat' one at a time. If its body was similar to a tiger's, this must surely mean that it was striped. Equally, as the most noticeable aspect of a lion's neck is its mane, the tigelboat probably had a mane or a ridge of hair along its neck. An elephant-like trunk implies the presence of an elongated snout and upper lip, and cow-like ears would be relatively large and ovoid. If its legs recalled a goat's, then they must have been fairly long and sturdy (but not massively constructed), and chicken-like claws could be interpreted either as claws like those of certain mammalian carnivores or as distinctive, pointed hooves. As for its goatee, this might have been merely a tuft of hair on its chin.

The tigelboat is an impossible hybrid no longer. Combine most of the translated features noted above, and the result is a description that can now be seen to portray very accurately a particular creature already familiar to science – a juvenile tapir. As already noted, unlike the adult the juvenile tapir is striped. Moreover, its ears are certainly large and ovoid, its limbs fairly long and sturdy but not massive, its hooves distinctive and pointed, and its snout and upper lip drawn out into a conspicuous proboscis or trunk.

Juvenile Malayan tapir – identity of Borneo's lost 'tigelboat'?

It is true, of course, that, whereas its three New World relatives are maned, the Malayan tapir normally lacks any notable extent of hair upon its neck (though juveniles are somewhat hairier than adults); equally, it is not bearded. However, during its existence upon the island of Borneo for 10,000 years since the end of the Pleistocene, totally separated from all other populations of *T. indicus* elsewhere in Asia, it is probable that a Bornean contingent of Malayan tapirs would evolve one or two morphological idiosyncrasies (just as isolated populations of many other widely distributed animal species have done). Nothing very spectacular, but enough to permit differentiation from all other *T. indicus* specimens; such features could readily include a mane or a beard or both. Certainly, in view of the otherwise impressive correspondence between the tigelboat and a juvenile tapir, the mere presence of a mane and beard is much too insignificant morphologically to challenge this identification.

The capture in Borneo of what was assuredly a young Malayan tapir should have attracted attention from zoologists, especially as the animal was maintained alive for a time at a prison in Tengarong. Tragically, however, it received no attention at all, and eventually it 'disappeared' – the fate of so many mystery beasts. No further news has emerged regarding this monumentally missed opportunity, and the whereabouts of the tigelboat's remains are

unknown, so there is no skeleton or skull available for identification, let alone the living animal itself. Not even a photo of it has turned up, and so the Bornean tapir is still a non-existent member of this island's fauna – at least as far as official records are concerned.

Even so, there is still hope that its existence will be confirmed one day. Borneo is a huge island, with extensive, little-penetrated rainforests and swamplands – ideal territory for secretive tapirs. And for absolute proof that large beasts can remain undetected here, look no further than the Sumatran rhinoceros *Dicerorhinus sumatrensis*, deemed extinct in Sarawak from the early 1940s, until a herd was found in a remote Sarawak valley in 1984.

If rhinos can exist unknown to science in parts of Borneo, how much greater is the likelihood that the smaller, well-camouflaged Malayan tapir can elude discovery there too?

The perplexing pukau

The same also applies to a mysterious pig-like beast that features in stories recounted by members of a Sabah tribe called the Saiap Dusuns. Known as the *pukau*, the creature in question is said to resemble a cross between a pig and a deer, to possess a sharp tongue, to occur in large numbers on Mount Madalong, and to give fierce chase if disturbed.

The description of the *pukau* as a mixture of pig and deer irresistibly recalls the babirusa *Babyrousa babyrussa*, the extraordinary wild pig of Sulawesi (Celebes) and certain nearby islets – a singular species noted for its very long and slender, deer-like limbs ('babirusa' translates as 'deer-pig'), and especially for its remarkable upper tusks, which grow upwards rather than downwards, until they eventually pass through its upper jaw and curve backwards towards its forehead. Could tusks like these be the identity of the *pukau*'s 'sharp tongue'? In short, is it possible that in pre-Holocene times the babirusa entered Borneo? During the Pleistocene, there were transitory land-bridge connections between Borneo and the faunal region known as Wallacea (which includes Sulawesi), thereby facilitating such migration.

Thunder horses and titanotheres

Throughout this book, mythology and iconography have offered some intriguing evidence for the persistence into recent times of many different animals traditionally believed to have become extinct long before the advent of modern man. However, they can also lay traps for the unwary and ingenuous who indiscriminately seek cryptozoological solutions to mysteries, failing to give equal consideration to more conservative, alternative explanations.

One of the most spectacular beasts from Amerindian mythology must surely be a huge, terrifying creature known as the thunder horse. According to Sioux legends emanating from Nebraska and South Dakota, thunder is the sound produced by the impact of its hooves when it leaps down from the skies to the ground during violent storms, and while on earth it also uses its hooves to slay bison. Needless to say, it would be tempting to postulate that this extraordinary story was inspired by eyewitness accounts of some mysterious living creature – accounts perhaps passed down verbally from one generation to another for many centuries and subjected to much elaboration and exaggeration, but none the less derived ultimately from original encounters with a modern-day animal. In fact, the true solution is very different.

The thunder horse legend actually arose from occasional discoveries by Sioux Indians of huge fossilized bones, which usually came to light when washed up out of the ground during heavy rainstorms. Unable to explain their origin, but aware of their appearances' coincidence with rain, the Sioux assumed that they were the earthbound remains of some immense, storm-engendered sky beast – and thus was the legend born.

Reconstruction of Brontotherium, *whose bones inspired the thunder horse legends.*

In reality, the bones were from an enormous rhinoceros-like ungulate, standing 8 ft tall at the shoulder and belonging to an extinct family of horse-related perissodactyls aptly called titanotheres. The type responsible for the thunder horse legend had existed roughly 35 million years ago, during the Oligocene, and it had borne upon its nasal bones a massive Y-shaped projection most closely resembling

the horn-like structures (ossicones) of the giraffes. When this creature's remains were examined during the 1870s by the celebrated American palaeontologist Professor Othniel Charles Marsh, the associated thunder horse myth inspired him to christen it *Brontotherium* – 'thunder beast'.

An anachronistic camel from Utah

In the nineteenth century, dromedaries and Bactrian camels were introduced into North America for various purposes, but the last of this continent's native camelids was a very large, llama-like version called *Camelops*. Generally assumed to have died out around 10,000 years ago, a notable challenge to this assumption was raised in 1928, when the celebrated American palaeontologist Professor Alfred Sherwood Romer published his conclusions concerning a very special camel skull sent to him by Utah University colleague Professor A.L. Matthews.

While exploring the igneous buttes some 20 miles south and west of Fillmore, Utah, two high-school boys had chanced upon the skull, about 200 ft back in a cave, buried under about 3–4 ft of fine dry eolian deposit. It consisted of a practically complete braincase and most of the palate, and was unfossilized – indeed, a strip of dried muscle was still attached to its basioccipital portion. Hence Romer initially assumed that it would simply prove to be from one of the dromedaries imported into the south-western United States during the 1870s.

To his astonishment, however, after studying its structure in minute detail he realized that, while differing markedly from the skulls of both species of Old World, modern-day camels, this extraordinary specimen corresponded very closely in many different features with North America's indigenous but supposedly long-extinct *Camelops*.

Only two explanations for this anachronistic anomaly seemed possible. The skull may have survived in an unfossilized state through some freak, hermetic process (like the *Mylodon* skin, p. 142). Alternatively, the skull may truly have been of recent origin, which would prove that *Camelops* had persisted far beyond the Pleistocene's close, existing well into historic times. As Professor Janis has noted to me, given that half a million years is considered excellent resolution in fossil records, why should the discovery of recent remains of a species which has its last fossil record in the mid to late Pleistocene be deemed so astonishing – especially when, as with *Camelops*, environmental conditions favouring its continued survival have persisted in some parts of the USA right up to the present day?

Nowadays, this case could be dealt with by applying radio-carbon dating techniques to the skull, but these do not appear to have been carried out in relation to this particular example. A compilation of 25 dates for *Camelops* material was published in 1984, but unfortunately background details were not included for all of the dates, so it is unclear whether the Fillmore specimen was among the material examined. And as no other unfossilized remains of *Camelops* have been reported, the secret of this exceptional skull remains undisclosed.

Llamas or litopterns? – a polydactylous puzzle

There are four modern-day species of camelid in South America. Some populations of the vicuna *Vicugna vicugna* and guanaco *Lama guanacoe* still exist in a wild state, whereas the llama *L. glama* and alpaca *L. pacos* are wholly domesticated (and are probably descended from the guanaco), but all four share one highly significant feature. They all have just two toes on each foot.

The great Tiahuanacan empire, dating back to between the first and sixth centuries AD, extended westwards from the Bolivian border of Lake Titicaca as far as the southern coast of Peru, and included Pisco. It was near Pisco, while excavating amidst the ruins of two coastal Tiahuanacan cities during the early 1920s, that Peruvian archaeologist Professor Julio C. Tello uncovered some pottery fragments depicting llama-like beasts with *five* toes on each foot.

Within *In Quest of the White God* (1963), Pierre Honoré wondered if these fragments implied that the ancestral five-toed llamas had not become extinct many thousands of years ago, but had survived as living fossils until much more recent times. In fact, this line of thought is founded on a basic error – because there has never been any species of five-toed llama.

The mammalian foot is fundamentally pentadactyl (equipped with five digits), but during the evolution of some mammal groups (including the ungulates) digit reduction has occurred. In the camelids, this began at a very early stage in their emergence from the ancestral ungulate stock. Indeed, even the very earliest recognizable true camelids – such as *Poebrotherium* from North America's mid-Oligocene (about 30 million years ago) – had only two toes per foot. *Protylopus*, of North America's late Eocene (roughly 38 million years ago) still had four toes, but it does not seem to have been a direct ancestor of later camelids.

The camelids originated in North America, migrating into the Old World by land-bridges during the

Pliocene, which began five million years ago. However, the modern-day South American camelids' ancestor did not reach South America until the Pliocene's close, about three million years later, when this continent (which had been an island) became rejoined to North America by the isthmus of Panama, which rose up above sea-level at that time.

In short, whatever the Tiahuanacan five-toed beasts were, they were not ancestral llamas. However, Tello's finds were not limited to mysterious portrayals on pottery. Later, he also discovered some skeletons of llamas, with five toes, buried amidst the remains of temples. Did this mean, therefore, that, despite all the dictates of palaeontology, pentadactyl camelids had indeed existed, and had persisted in South America beyond the arrival here of man?

The answer again is no, because there is a much less radical, and far more straightforward, solution to this mystery. Polydactyly, a genetically induced teratological condition, is the possession of more than the normal number of fingers or toes (or both). Polydactylous individuals occur quite frequently in many mammalian species (including man), and some confirmed examples have been recorded from the modern-day quartet of South American camelids.

At Tilcara, in the Argentinian province of Jujuy, the remains of two polydactylous guanacos were found inside Indian tombs dating back to the pre-Columbian era, as documented in 1917 by G. Martinolli. In 1930, Dr Carlos Rusconi recorded another such specimen, found in a tumulus (Indian burial mound) at Santiago del Estero, also in Argentina. In these cases, the animals had three toes rather than five, but more extreme examples have been recorded from other mammalian species. Thus it is not unreasonable to suppose that the Tiahuanacan depictions were inspired by polydactylous llamas (or guanacos?).

Freak specimens of animals have frequently attracted special attention from man, who has looked upon them variously as the harbingers of doom or the heralds of good fortune, but always as important (often magical) beasts. Hence it is not surprising that the remains of polydactylous camelids should be found in association with Indian relics; as Honoré suggested, because of their unique appearance they may well have been regarded as sacred, and therefore deliberately maintained within the temples. Certainly, the presence of such creatures' remains inside Indian tumuli and tombs implies that they were believed to embody some special significance – capable, perhaps, of granting safe passage for the Indians into the next world?

Before finally deciding that the five-toed llamas of Tiahuanaco were truly nothing more than polydactylous specimens of modern-day species, however, one further, very exciting (albeit rather more radical) possibility is well worth consideration.

During its existence as an island continent – lasting over 60 million years – South America hosted the evolution of several unique orders of ungulate, all of which regrettably died out after its reconnection with North America. One such order constituted the litopterns. Some of these were remarkably faithful morphological imitators of horses, and hence are often termed pseudo-horses, whereas others were more like camelids, and were known as macraucheniids. Certain of these latter beasts, such as *Theosodon* of the early Miocene, were extremely llama-like – except that they had three toes on each foot instead of two.

The last fossil record for the litopterns is the late Pleistocene, but this is not absolute proof that none survived beyond that date. Indeed, Professor Janis considers that a stylized representation of one of the three-toed llama-like litopterns is at least a possible explanation for the creatures depicted on the Tiahuanacan pottery. The visible discrepancy in toe count between the depicted beasts and their postulated litoptern models may be due to stylization – perhaps even a deliberate attempt on the part of the artist to emphasize and exaggerate the llama-like litopterns' most noticeable external difference from true, camelid llamas?

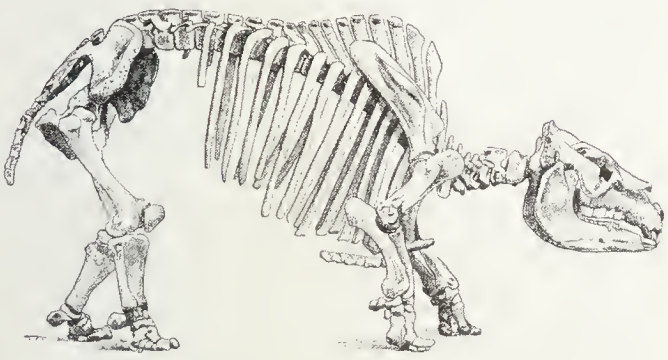
Frustratingly, it is here, possibly even on the very brink of proving that litopterns and man were indeed contemporary, that this saga currently draws to a close – until (if ever) a tumulus or temple is found that contains the conclusive remains of a llama-like litoptern and not a polydactylous llama or guanaco.

The notoungulate and the novel

Another Tiahuanacan riddle features some pieces of ceramic pottery and also some stonework uncovered there that apparently portray a very large hippopotamus-like beast unrecognizable among today's South American fauna. Until the Pleistocene's close, however, such a creature did exist here. Known as a toxodont, it belonged to another principally (though this time not exclusively) South American order of hoofed mammals – the notoungulates.

While acting as a zoological advisor to Sir Arthur Conan Doyle during the preparation of his novel *The Lost World* at the end of 1911, British Museum (Natural History) director Sir Edwin Ray Lankester suggested that a modern-day species of *Toxodon*

may await formal scientific discovery. Bearing in mind that this is the same expert who correctly identified the remarkable okapi as a short-necked giraffid, his opinions cannot be easily dismissed. So perhaps palaeontologists should look out for post-Pleistocene remains of toxodonts too!



Skeleton of Toxodon, *a giant South American notoungulate.*

The last of the Irish elks?

Standing 4½–5 ft tall at the shoulder, the Irish elk *Megaloceros giganteus* was one of the largest species of deer that ever lived. It was also one of the most famous, on account of the male's enormous antlers, attaining a stupendous span of 12 ft and a weight of over 100 lb in some specimens. Sadly, its common name is misleading, as this impressive species is only very distantly related to the true elk (moose), and, far from being an Irish speciality, was prevalent throughout the Palaearctic Region, from Great Britain to Siberia and China.

Reconstruction of the Irish elk.

Nevertheless, it is to Ireland that we must turn for the majority of clues regarding *Megaloceros* – because in contradiction to the accepted view that it died out here 10,600–11,000 years ago (just prior to the Holocene's commencement), certain accounts and discoveries from the Emerald Isle have tempted researchers to speculate that this giant deer may still have been alive here a mere millennium ago.

According to accounts documented by H.D. Richardson in 1846, and reiterated by Edward Newman in the pages of *The Zoologist*, the ancient Irish used to hunt an extremely large form of black deer, utilizing its skin for clothing, its flesh for food, and its milk for the same purposes that cow milk is used today. Supporting that remarkable claim is a series of bronze tablets discovered by Sir William Betham; inscribed upon them are details of how the ancient Irish fed upon the flesh and drank the milk of a great black deer.

These accounts resurfaced two decades later within an examination of the Irish elk's possible survival here into historic times by naturalist Philip Henry Gosse, in which he also documented an intriguing letter written by the Countess of Moira. Published in the *Archaeologia Britannica*, this letter recorded the finding of a centuries-old human body in a peat bog; the well-preserved body was completely clothed in garments composed of deer hair, which was conjectured to be that of the Irish elk.

Most interesting of all, however, was the discovery in 1846 by Dublin researchers Glennon and Nolan of a huge collection of animal bones surrounding an island in the middle of Lough Gûr – a small lake near Limerick. Among the species represented in it was the Irish elk, but of particular note was the condition of this species' skulls. Those lacking antlers each bore a gaping hole in the forehead, which seemed to have been made by some heavy, blunt instrument – recalling the manner of slaughtering cattle and other meat-yielding domestic animals with pole-axes, still practised by butchers in the mid-to-late 1800s. Conversely, those skulls that were antlered (one equipped with immensely large antlers) were undamaged.

Did this mean that the antler-less (i.e. female) Irish elks had actually been maintained in a domestic state by man in Ireland, as an important addition to his retinue of meat-producing species? Professor Richard Owen sought to discount such speculation by stating that the mutilated skulls were in reality those of males, not females, and that the holes had resulted from their human killers wrenching the antlers from the skulls.

However, this was swiftly refuted by Richardson,

whose experiments with intact skulls of male Irish elks showed that when the antlers were wrenched off they either snapped at their bases, thereby leaving the skulls undamaged, or (if gripped at their bases when wrenched) ripped the skulls in half. On no occasion could he obtain the curious medially sited holes exhibited by the Lough Gûr specimens. Clearly, therefore, these latter skulls were from female deer after all, explaining their lack of antlers – but what of the holes?

As Gosse noted in his coverage of Richardson's researches, it is significant that the skulls of certain of the known meat-yielding mammals present alongside the *Megaloceros* skulls at Lough Gûr had corresponding holes – and as Gosse very reasonably argued: 'As it is evident that *their* demolition was produced by the butcher's pole-ax, why not that of the elk skulls?'

After presenting these and other accounts, Gosse offered the following conclusion:

> From all these testimonies combined, can we hesitate a moment in believing that the Giant Deer was an inhabitant of Ireland since its colonisation by man? It seems to me that its extinction cannot have taken place more than a thousand years ago. Perhaps at the very time that Caesar invaded Britain, the Celts in the sister isle were milking and slaughtering their female elks, domesticated in their cattle-pens of granite, and hunting the proud-antlered male with their flint arrows and lances. It would appear that the mode of hunting him was to chase and terrify him into pools and swamps, such as the marl-pits then were; that, having thus disabled him in the yielding bogs, and slain him, the head was cut off, as of too little value to be worth the trouble of dragging home . . . and that frequently the entire carcase was disjointed on the spot, the best parts only being removed. This would account for the so frequent occurrence of separate portions of the skeleton, and especially of skulls, in the bog-earth.

Although undeniably thought-provoking, the case of *Megaloceros*'s persistence into historic times in Ireland as presented by the above-noted nineteenth century writers has never succeeded in convincing me – for a variety of different reasons.

For instance, there is no conclusive proof that the large black deer allegedly hunted by the ancient Irish people really were surviving *Megaloceros*. Coat colour in the red deer *Cervus elaphus* is far more variable than its common name suggests and, as is true with many other present-day species of sizeable European mammal, specimens of red deer dating from a few centuries ago or earlier tend to be noticeably larger than their twentieth century counterparts.

Similarly, the Lough Gûr skulls' ostensibly significant contribution to this case rests upon one major, fundamental assumption – that they are truly the skulls of *Megaloceros* specimens. But *are* they? Precise identification of fossil remains is by no means the straightforward task that many people commonly believe it to be.

Perhaps the greatest of all mysteries associated with this case, however, is that subsequent investigations of *Megaloceros* survival in Holocene Ireland as inspired by the researches of Gosse and company, and formally documented in the scientific literature, are conspicuous only by their absence. (In September 1938, A.W. Stelfox of Ireland's National Museum, in Dublin, did consider this subject, but without reference to any of the above accounts.) Yet if the case for such survival is really so compelling and conclusive, how can this investigative hiatus be accounted for?

Seeking an explanation for these assorted anomalies, I consulted mammalian palaeontologist Dr Ian Lister at UCL – who has a particular interest in *Megaloceros*. Confirming my own suspicions, Dr Lister informed me that it is not unequivocally established that the female Lough Gûr skulls were from *Megaloceros* specimens, and he suggested that they might be those of female *Alces alces*, the true elk or moose, which did exist in Ireland for a time during the Holocene (though it is now extinct there). Certainly in general form and size, female *Alces* skulls seem similar to the Lough Gûr versions.

In contrast, Lister agreed that the enormous size of the antlers borne by the male Lough Gûr skulls indicated that these were bona fide *Megaloceros* skulls; but as he also pointed out, although their presence in the same deposits as the remains of *known* domesticated species is interesting, without careful stratigraphical evidence this presence cannot be accepted as conclusive proof of association between *Megaloceros* and man.

In his *Megaloceros* account, Gosse included some reports describing discoveries in Ireland of huge limb bones assumed to be from *Megaloceros*, which were so well preserved (and hence recent?) that the marrow within them could be set alight, and thereby utilized as fuel by the peasantry, or even boiled to yield soup! Yet once again, as I learnt from Dr Lister, these were not necessarily *Megaloceros* bones – especially as the limb bones of red deer, moose, and even cattle are all of comparable shape and form, and can only be readily distinguished from one another by

osteological specialists (who do not appear to have been granted the opportunity to examine the bones in those particular nineteenth century instances, and the bones were not preserved afterwards). Furthermore, on those occasions when exhumed bones used for fuel purposes *have* been professionally examined, none has been found to be from *Megaloceros*.

In conclusion: far from being proven, the case for post-Pleistocene survival of *Megaloceros* in Ireland is doubtful to say the least. Nevertheless, this is not quite the end of the trail. As noted by zoologist Dr Richard Lydekker, and more recently by palaeontologist Professor Bjorn Kurten, the word '*Schelk*', which occurred in the famous *Nibelungenlied* (*Ring of the Nibelungs*) of the thirteenth century, has been considered by some authorities to refer to specimens of *Megaloceros* alive in Austria during historic times; other authorities, conversely, have suggested that a moose or wild stallion is a more plausible candidate.

Whatever the answer to the above proves to be, far more compelling evidence for such survival was presented in 1937 by A. Bachofen-Echt of Vienna. He described a series of gold and bronze engravings on plates from Scythian burial sites on the northern coast of the Black Sea. Dating from 600–500 BC and now housed at the Berlin Museum, the engravings are representations of giant deer-like creatures, whose antlers are accurate depictions of *Megaloceros* antlers! Undeniable evidence at last for Holocene survival?

The enigma of these engravings has perplexed palaeontologists for decades, but now a notable challenge to their potential significance has been put forward by Dr Lister, who has provided a convincing alternative explanation – postulating that the engravings were not based upon living *Megaloceros* specimens, but rather upon fossil *Megaloceros* antlers, exhumed by the Bronze Age people. This interpretation is substantiated by the stark reality that out of the hundreds of Holocene sites across Europe from which fossil remains have been disinterred, not a single one has yielded any evidence of *Megaloceros*.

True, absence of uncovered Holocene remains of *Megaloceros* does not deny absolutely the possibility of Holocene persistence (after all, there are undoubtedly many European fossil sites of the appropriate period still awaiting detection and study). But unless some such finds *are* excavated, it now seems much more likely that, despite the optimism of Gosse and other Victorian writers, this magnificent member of the Pleistocene megafauna failed to survive that epoch's close after all, like many of its extra-large mammalian contemporaries elsewhere.

Antlered giraffes and out-of-place okapis

Sivatheres comprise a distinct group of giraffids very different in appearance from the familiar modern-day giraffe and okapi. Their bodies were massive and ox-like in shape, and their heads bore palmate, antler-like horns (modified ossicones – the bony, skin-covered, non-deciduous horns peculiar to giraffids), which conferred upon these animals more than a passing resemblance to gigantic deer (especially the moose *Alces alces*). Traditionally believed to have become extinct by the Pleistocene's close, there is some tantalizing iconographical evidence to suggest that they may have survived into much more recent times.

For instance, in the central Sahara's Tibesti Mountains is a rock-shelter containing a petroglyph of a possible sivathere – the petroglyph is no more than 8,000 years old. More compelling but also more controversial, however, is an enigmatic chariot-ring of Sumerian origin that dates back to around 2500 BC and which was unearthed at Kish, in Iraq, during the early 1930s by a joint archaeological expedition from Chicago's Field Museum and England's Oxford University. What makes this ring so intriguing is that it is ornamented with a sculpted figurine of a large antlered beast that bears a striking similarity to a very large Asian and African sivathere, known as *Sivatherium*.

Reconstruction of Sivatherium *– was this antlered giraffe domesticated by the Sumerians?*

The ring's figurine was initially thought to represent a robust-bodied deer, but when eminent vertebrate palaeontologist Dr Edwin Colbert examined it a few years after its discovery he perceived that it exhibited several morphological features not common to any known form of deer, yet which were all characteristic

of *Sivatherium*. These included the presence of a pair of small, conical, knob-like horns on the figurine's forehead in front of its large palmate 'antlers', the posterior siting of the 'antlers' (those of deer are positioned further forward on the skull), the general shape and orientation of the cores of these 'antlers', and the swollen shape of the figurine's nostrils.

What makes this figurine even more remarkable is that its sculpture incorporates what appears to be a representation of a rope or tether, attached to its muzzle. If that interpretation is correct, this implies that, irrespective of its taxonomic identity, the creature was a captured or domesticated beast. The concept of sivatheres not only lingering into the age of the Sumerian civilization but also existing within it as domestic beasts is undoubtedly a radical one, as Colbert readily accepted, but the morphological match between the figurine and the likely appearance of *Sivatherium* (as based upon reconstructions from fossil evidence) is persuasive enough for this notion to warrant serious consideration.

Sivathere survival into the Holocene has also been examined by Professor Janis – who has provided some indications, in the form of various Russian and early Middle Eastern carvings of deer-like beasts with sivathere-like antlers, that another of these giraffids, *Bramatherium*, may have persisted long enough to leave behind a folk memory of its former existence, which could account for the shape of the sculptures' antlers.

And speaking of the shape of sculptures' antlers: in 1977, Heidelberg University graduate student Michael Müller-Karpe announced that the antlers of the famous Sumerian chariot-ring's figurine of a supposed sivathere were actually incomplete. In a small box of dried mud housed in a storeroom at Chicago's Field Museum, he had discovered some corroded copper artefacts resembling carved, branched antlers, which upon examination were found to be the hitherto unknown, distal portions of this figurine's antlers!

They must have broken off at some stage prior to the figurine's discovery, so that until now they had not been recognized as part of it. As a result of this unexpected find, zooarchaeologist Dr David S. Reese of the Field Museum recently stated that the figurine conclusively depicted a Persian fallow deer *Dama dama mesopotamica*, not a sivathere – but this was swiftly challenged by Janis, who presented persuasive reasons for continuing to endorse a sivathere identity for it. Clearly, the dispute is far from over after all.

Finally, one sivathere-related aspect not previously commented upon is the resemblance between these unusual giraffids (especially *Sivatherium* itself) and certain depictions of the legendary Chinese unicorn or *ki-lin*. Ignoring readily identifiable flourishes of ornate stylization, one example is the version reproduced here, portraying the male *ki-lin*.

Traditional depiction of the male Chinese unicorn or ki-lin.

The case of the Sumerian chariot-ring centred upon the possibility that a representation of a presumed non-giraffid (in this instance a deer) may in reality have been of a bona fide prehistoric giraffid. In contrast, the next case under consideration is the exact converse – revealing how a representation of an alleged prehistoric giraffid now seems not to have been of one at all.

Flanking the monumental eastern staircase of the Apadana Palace at Takht-e-Jamshid at Persepolis, in Iran, is an Achaemenien frieze that depicts a delegation leading by a tether a superficially giraffid-like beast. (A second such frieze, associated with the northern staircase, is half-destroyed.) Erected at the time of Darius the Great (approximately 500 BC), the palace contains a number of friezes portraying the offering of tributes to the king from visiting foreign representatives – hence it is logical to assume that this animal was likewise a gift, transported here from elsewhere. Certainly, neither of today's surviving species of giraffid is known to have been native to this region at that time.

As for the identity of the creature: in 1953, B. Patterson suggested that this bemusing beast might actually have been an okapi, but this hypothesis is beset by some very difficult problems. For example, modern-day experience in maintaining okapis in captivity strongly discredits any such identity for the depicted animal, because they can be notoriously difficult to sustain in zoos, thereby making the merest possibility of transporting a living specimen from its native Zaire forests all the way to Iran an exceedingly remote one. In any event, the Persepolis beast and the okapi are far from exact morphological counterparts.

The beast's neck is proportionately longer than the okapi's, its profile is more giraffine than okapine, it has a mane (like giraffes, but unlike okapis), and appears smaller in overall size (when compared with the human figures depicted alongside it). Yet, paradoxically, it does not wholly resemble a giraffe either – its ears are too short and small, and are neither broadly expanded nor fringed with hairs as in genuine giraffes, its neck and limbs are too short and its body seems too robust in build, yet far too small in size.

When Janis showed a photo of the Persepolis beast to giraffid expert Dr Nikos Solunias at Baltimore's Johns Hopkins University, he suggested that it might be an extinct Turkish giraffid called *Paleotragus rouenii*. This species is known to have existed around seven million years ago, but could it have lingered in the Middle East until the time of Persepolis?

A very different solution was offered in 1978, when Robert G. Tuck (writing as Reza Gholi Takestani) identified the Persepolis beast as neither giraffe nor okapi; indeed, not a giraffid of any type – but rather as a male specimen of a long-necked Indian antelope called the nilghai or blue bull *Boselaphus tragocamelus*. Vaguely reminiscent of a bulky okapi, the nilghai is undeniably much closer in overall morphology to the Persepolis beast than is either the giraffe or okapi. It even shares additional features that collectively posed severe problems for the giraffid school of supporters – such as the beast's lateral digits (these vestigial toes are absent in giraffids), its long, extensively tufted tail and its sharp, hairless horns.

As this species is much more hardy than the okapi and readily maintained in captivity, it is not so difficult to believe that a male nilghai, purchased by the visiting delegation during its journey to Iran, could (and did) survive the long journey from its native land to the Middle East. Exit an out-of-place okapi and a persisting *Paleotragus*!

Mentioning the man-beasts

As noted in this book's Introduction, an in-depth treatment of those man–beasts relevant to prehistoric survival is outside the intended scope of the present work, but the current views regarding this subject can be succinctly outlined as follows.

Unlike those reported from elsewhere, traditions of man–beasts in Madagascar are most likely based upon encounters with certain forms of giant lemur, traditionally believed to have died out several millennia ago, but now known to have survived into historic times before finally becoming extinct. Notable among these are *Palaeopropithecus* – a slothful, ape-like lemur that may have inspired native reports of the calf-sized, man-face *tratratratra*, documented in 1658 by a French traveller called Admiral Étienne de Flacourt – and the giant aye-aye *Daubentonia robustus*, which conceivably survived until as recently as the 1930s.

The most famous man–beasts are unquestionably the yeti or abominable snowmen of the Himalayas, and the bigfoot or sasquatch of North America. There are three quite distinct types of yeti. Smallest is the *teh-lma*, a 3–4 ft tall, red-furred being inhabiting the warmer valleys and probably comprising a race of proto-pygmy. The 'true' yeti, responsible for the well-known tracks frequently seen and photographed in the snow, is the *meh-teh* – 5 ft tall, often quadrupedal, with reddish-brown fur and conical head, spending most of its time in the dense rhododendron forests. It is likely to be either a modified form of orang-utan, adapted for a more terrestrial mode of existence than those subspecies currently known to science (this is also a popular identity for the Chinese wildman or *yeren*), or it might be a surviving representative of *Sivapithecus*. This was a prehistoric ape known from Europe and southern Asia, probably quadrupedal, with a face resembling the modern-day orang-utan's, which officially died out around nine million years ago during the Miocene epoch.

The third type of yeti is the *dzu-teh* or *rimi* – a hulking, hairy giant, 7–9 ft tall, with dark hair and human-like feet. A Tibetan lama called Chemed Rigdzin Dorje Lopu claimed in 1953 that he had examined two mummified *rimis* – one was housed in the monastery at Sakya, the other in the monastery at Riwoche in Kham Province. This was before the annexing of Tibet by China, followed by the razing of thousands of Tibetan monasteries.

The *rimi* is very reminiscent of *Gigantopithecus* – variously classed as either a gigantic ape, or a primitive

antecedent of mankind. Up to 10 ft tall, and distributed from Pakistan to southern China, it seemingly died out around 300,000 years ago – but for no good reason that palaeontologists have been able to uncover. The *rimi*'s description also corresponds very closely to that of North America's mysterious man–beast, the bigfoot (sasquatch) – and at the time of *Gigantopithecus*'s existence, a land-bridge connected Asia with North America.

Could some of these giant primates have survived in the Old World and others migrated into the New World, with elusive modern-day descendants respectively explaining the *rimi* and bigfoot? Professor Grover Krantz, a noted anthropologist from Washington State University, is so convinced by this latter prospect that he classifies the bigfoot as a living (if still unrecognized) representative of the principal fossil species, *Gigantopithecus blacki*.

In tropical Africa, reports have emerged from natives and European settlers concerning furry, bipedal man–beasts. These may either be undiscovered tribes of bushmen, or relict ancestral hominids called australopithecines, which supposedly died out at least one million years ago. The shorter, gracile man–beasts, such as Tanzania's *agogwe*, Senegal's *fating 'ho*, and Zaire's *kakundakari*, recall the slender *Australopithecus africanus*, *A. afarensis*, or even *A. ramidus* (the recently unearthed, oldest species). The taller, burlier *kikomba* of Zaire and Kenya's *ngoloko* are closer to *A. (Paranthropus) robustus* or to *A. (Zinjanthropus) boisei*. They may even be a surviving representative of our own species' direct ancestor – *Homo (Pithecanthropus) erectus*, a powerful, 5–6-ft-tall, chinless human with a thickened skull, heavy brow ridges, flat face, powerful projecting jaws, and large teeth.

This identity has also been proffered in relation to south-east Asia's most well-known man–beast, the *orang pendek* or *gugu* of Sumatra (though some reports assigned to this being clearly refer to giant gibbons). Its Bornean equivalent is the *batutut*, and apparently there was once a similar form called the *nittaewo* on the island of Sri Lanka.

Unexpectedly, a man–beast recalling *Homo erectus* has even been reported from Australia, where it is termed the *yowie*. This identity has been strengthened by the excavation of 13,000-year-old hominid fossils at Victoria's Kow Swamp that share certain cranial features with *Homo erectus*, such as protruding jaws, ridged brows, and thick skulls.

But how could such a primitive form have reached this island continent? Illinois University anthropologist Dr Charles Reed has recently proposed that modern man and *H. erectus* (which were contemporaries for a time) might have actually lived together – with *H. erectus* thus accompanying modern man when he made the first journeys by raft to Australia around 40,000 years ago, but then reverting to a wild state after becoming established there.

The most exciting man–beasts on file include such beings as the Mongolian *almas*, Pakistan *bar-manu*, Siberian *chuchunaa*, and the hairy ape-men of Vietnam – because, according to native descriptions of these shy, reclusive mountain-dwellers, they bear much more than a passing resemblance to *Homo neanderthalensis*, Neanderthal man.

One recently deceased man–beast of this type may even have been on public display – encased in a block of ice, in a Minnesota sideshow! This enigmatic hirsute exhibit, nicknamed the iceman or Bozo, was closely examined in December 1968 by Dr Bernard Heuvelmans and Ivan Sanderson. When, however, the FBI also began to express an interest (the iceman had apparently been shot – killed by a bullet blasting away the back of its skull), the show substituted a plastic replica for it, and the original iceman has never been seen since.

Many sceptics claim that the original was itself a model, but Heuvelmans has always disputed this. He believes that the iceman had probably been shot in Vietnam, and was afterwards smuggled into the USA in one of the 'body bags' used at that time for bringing back home soldiers killed during the Vietnam War. Nearly 30 years have passed since the iceman was first displayed – but science is no closer to solving the mystery of its status. It could have been nothing more than a cleverly constructed fake, but it may have been conclusive proof that *Homo sapiens* is not the only surviving hominid in the twentieth century.

There is a very interesting passage in the Bible that seems to allude to the existence in historic times of two separate types of human. One is modern man *Homo sapiens*, but the other recalls a hairy man–beast – possibly of the *Homo erectus* or *Homo neanderthalensis* type? The passage in question (Genesis, 25:21–7) refers to the brothers Esau and Jacob:

> And Isaac intreated the Lord for his wife . . . and Rebekah his wife conceived.
> And the children struggled together within her; and she said, If it be so, why am I thus? And she went to inquire of the Lord.
> And the Lord said unto her, Two nations are in thy womb, and two manner of people shall be separated from thy bowels; and the one people

> shall be stronger than the other people; and the elder shall serve the younger.
> And when her days to be delivered were fulfilled, behold, there were twins in her womb.
> And the first came out red, all over like an hairy garment; and they called his name Esau.
> And after that came his brother out, and his hand took hold on Esau's heel; and his name was called Jacob . . .
> And the boys grew: and Esau was a cunning hunter, a man of the field; and Jacob was a plain man, dwelling in tents.

Consider the countless wars and the tyrannical persecution that man has inflicted upon man since the dawn of history, despite the fact that we all belong to the same species. What would happen, therefore, if it were eventually proved beyond a shadow of doubt that we are sharing this planet with a totally separate, *second* species of human? He would be an Esau to our Jacob, cunning and wise in the ways of the forest, the field, and the mountain, but wholly incapable of standing against the mechanized, multitudinous might of modern man. What would be the outcome of such a revolutionary discovery?

When I contemplate such matters, I think once again about a pair of Biblical brothers – but not Esau and Jacob. The names that enter my mind this time are Abel . . . and Cain.

May God, and *Homo sapiens*, prove me wrong.

STOP PRESS

DURING HIS recent searches for the *mapinguary*, Dr David Oren obtained some hair and faecal samples reputedly derived from this Brazilian mystery beast, and he is now conducting DNA analyses to determine whether they are from a mylodontid ground sloth.

From December 1994 to January 1995, cryptozoologist Eric Joye led a two-man Belgian expedition, dubbed 'Operation Mourou N'gou', to the Central African Republic, seeking the eponymous sabre-fanged water monster said to inhabit this country's lakes and rivers. Although they failed to spy it themselves, Joye and his team-mate, hunting guide Willy Blomme, gathered some interesting anecdotal evidence.

Claiming to have narrowly avoided being propelled into the Bamingui River by one of these animals as he sat fishing in February 1985, a native guide called Marcel disclosed to Joye that the *mourou n'gou* hunts in pairs – one waiting in the river to seize any prey chased into the water by the other one.

Marcel likened its shape and size to a leopard's, and stated that its pelage is ochre in colour, dappled with blue and white spots that are very distinct upon its back but less well-defined upon its flanks. According to Marcel, its long tail is hairier than the leopard's, its head is like that of a civet (does this mean that, like the civet, it has a dark face mask?), but its teeth are very large, like those of a big cat such as the lion.

Marcel followed the *mourou n'gou*'s trail, which was like that of a leopard but bigger, and said that when it runs it leaves behind the impression of claws (not usual for a leopard).

The year when John A. Jordan allegedly spied a *dingonek* is unclear. It was in 1905 in *The Elephant Stone* (1959); 1907 in his letter to London's *Daily Mail* of 16 December 1919; and 1908 in an article by Jean-Pierre Anselme (*VSD Nature*, December 1993).

In another book, *Elephants and Ivory* (1956), Jordan noted that it was considered bad luck to kill a *dingonek*. This belief is also prevalent concerning Zaire's equivalent mystery beast, the *ntambo wa luy* or *simba ya mail*, as recorded in Charles Mahauden's book *Kisongokimo* (1965) – recently brought to my notice by Michel Raynal. Such taboos have undoubtedly assisted in saving these potentially dangerous creatures from extirpation.

Finally: for the romantic zoologist in all of us. During the Pleistocene's Villafranchian period (ending about 1 million years ago), Europe harboured an extraordinary antelope called *Procamptoceras brivatense*. What made this creature so remarkable was the extreme nearness to one another of its two upward-pointing, in-line horns. Indeed, quoting from *The Ice Age* (1972), written by internationally renowned palaeontologist Professor Bjorn Kurten:

> The horns are very close together. In life the horn-cores were covered with horny sheaths that must have been so closely appressed that the animal looked like a unicorn.

Officially, *Procamptoceras* died out before man reached Europe, but what if this species persisted into more recent times than currently indicated by available fossil evidence? If such a creature had been contemporary with man, it would be tempting indeed to speculate that our unicorn legends derive from a distant, hazily-recalled memory of *Procamptoceras*.

How wonderful it would be if palaeontology, and *Procamptoceras*, ultimately confirm that the unicorn – surely the quintessential fantasy beast – was once a real animal after all.

In Conclusion: Back to the Future?

> We ought to make up our minds to dismiss as idle prejudices, or, at least, suspend as premature, any preconceived notion of what *might*, or what *ought to*, *be* the order of nature, and content ourselves with observing, as a plain matter of fact, what *is*.
>
> Sir John Herschel, *Preliminary Discussion*

Herschel's advice should be taken to heart by anyone still sceptical about prehistoric survival. The countless examples of independently submitted, yet independently corroborating, testimony presented and assessed in this book yield a corpus of data so compelling and convincing that there really cannot be room for doubt that a number of visually spectacular and palaeontologically significant mystery beasts do frequent assorted expanses of land, fresh water, and ocean around the world. Such a concept undeniably disturbs the more traditionally minded members of the zoological community, but when the facts are examined in an objective, scientific manner no satisfactory alternative explanation can be found.

Not even the faithful stalking horse of the sceptic and the cynic – discounting such reports as an unholy alliance of native folklore, imagination, inebriation, and wicked mendacity – can muster much enthusiasm or verisimilitude when its own pedigree is investigated. What will be found is (for its protagonists) an embarrassing exuberance of instances in which, even when confronted by the most virulent scientific scorn, such testimony has been fully vindicated.

Who in the west took seriously the Wambutti pygmies' claims that a donkey-like beast with the stripes of a zebra but the cloven feet of an antelope inhabited the humid depths of their Congolese rainforest homeland? Everyone – but only after Sir Harry Johnston in 1901 had obtained the skins and skulls of a hitherto-unknown and incongruously short-necked giraffe of prehistoric parentage that we nowadays refer to as the okapi.

Longstanding tribal claims that a gigantic hairy ogre inhabited the Virunga Volcano range bordering Zaire, Rwanda, and Uganda were patronizingly swept aside by western scientists as the overblown product of too much myth and magic – until the mountain gorilla *Gorilla gorilla beringei* was discovered there in 1902.

For centuries, Mexican ranchers were derided by science for their quaint belief in the existence of a large cheetah-like cat called the onza – until on 1 January 1986 a rancher actually shot one, and presented it to a team of zoologists for formal examination. Among the several different identities currently under consideration for it is a relation of Truman's cheetah *Acinonyx trumani* – a New World puma-like cheetah from the Pleistocene.

Thai fishermen on the River Chao Phraya who alleged that it contained enormous stingrays experienced that particular kind of disbelief specifically reserved for anglers who relate stirring accounts of 'the big one that got away' – until, in June 1988, a colossal 15-ft-long specimen with a body disc almost 6½ ft wide was hooked and made available for scientific scrutiny. It proved to be a dramatically novel form of freshwater whip-tailed stingray, later dubbed *Himantura chaophraya*, one of this century's biggest new species of fish.

And who could possibly trust native stories of a bizarre beast resembling a whistling panda that flashes its chest at anyone passing by? Fortunately for cryptozoology, Australian zoologist Dr Tim Flannery did, and in 1994 he was rewarded with

the discovery of a notable living fossil called the *bondegezou*, a very primitive new species of black-and-white tree kangaroo inhabiting the remote mountain jungles of Irian Jaya (Indonesian New Guinea).

The list goes on and on – as revealed in my book *The Lost Ark. New and Rediscovered Animals of the 20th Century* (1993) – proving something that should already have been self-evident to men of science. Local people inhabiting a given area for countless generations are likely to know more about the types of creatures sharing their region than visiting researchers who rarely penetrate far beyond its relatively tame fringes and borderlands.

So if there are plenty of precedents for the discovery even today of prehistoric survivors and other major new species, why are those documented in this book still awaiting formal scientific detection? Inaccessibility and inhospitability of their native habitat is one significant factor (especially in relation to mystery beasts likely to be living fossils), and was discussed in the Introduction, but it is not the only obstacle.

For instance, the nature of the creatures themselves can shed some light upon their famed ability to avoid discovery. A nocturnal species is clearly going to be more difficult to espy and ensnare than a diurnal counterpart, and an aquatic or aerial species will obviously prove more of a problem to track down than a terrestrial creature.

Monitoring a briefly captive specimen revealed why the megamouth shark *Megachasma pelagios*, up to 17 ft long and found in many parts of the world, succeeded in eluding scientific discovery until 1976. It performs vertical migration – staying in the ocean depths during the day and rising closer to the surface only during the cover of darkness at night.

Even during the height of the Victorian era's passion for lepidoptery, Queen Alexandra's birdwing, the world's largest species of butterfly, remained unknown to science. Only in 1906 was it finally brought down to earth, quite literally – on account of its size (as large as a pigeon) and its preference for lingering high in the jungle canopy, far beyond the reach of even the biggest butterfly net, earnest entomologists finally resorted to shooting down specimens with a rifle!

For very sound ecological reasons – elegantly elucidated in Paul Colvinaux's classic book *Why Big Fierce Animals are Rare* (1980) – large carnivorous species will necessarily be less common than their prey. Existing at the pinnacle of their ecosystem's food pyramid, they cannot be more abundant than their prey, otherwise they would exhaust their own food supply. It follows, therefore, that these species will be less easy to observe, especially as the success of their entire lifestyle depends upon their ability to remain unseen. It should come as no surprise, therefore, to discover that a disproportionate number of mystery beasts documented in this book are of the large carnivorous variety – spied so briefly and relatively rarely that they present their observer with little likelihood of effecting a capture.

Of course, in some such cases we might actually be witnessing the natural extinction of a species – sightings of it are rare simply because it is itself rare. Heuvelmans suggested that the category of elongate sea monster dubbed by him the super-otter may well be extinct – modern-day reports of this creature virtually ceased after the mid-1800s. It would not be the first time that a contemporary species has vanished before science had even recognized its existence. By definition, many such animals will never be known to us, but a few have reached the zoological chronicles by virtue of preserved specimens or reliable anecdotal evidence coming to light some years after the last first-hand sightings.

The sea mink *Mustela macrodon* of eastern North America apparently died out during the 1880s, but not until some teeth and other remains were found in coastal Indian shell heaps at the turn of this century was its status as an undescribed species recognized and rectified.

Much more recently, an agonizing two years passed between the procurement of the first horns, skulls, and skins in 1992 and the capture in 1994 of the first living specimen ever recorded by science belonging to Vietnam's extraordinary Vu Quang ox, *Pseudoryx nghetinhensis*. In the meantime, some zoologists had begun to fear that it may have died out, perhaps just months before its scientific unveiling in 1992. The largest new mammal to have been discovered for over 50 years, this fascinating animal is apparently related to a primitive group of ungulates called the hemibovids, which became extinct over four million years ago.

One aspect totally neglected by cryptozoological sceptics, but which is of profound importance when seeking reasons for the continuing evanescence of certain mystery animals, is the prevailing political situation within the country reputedly harbouring them. Many cryptozoological expeditions have found to their cost that obtaining the necessary visas and other rigmarole lavishly tied up in the correct length and thickness of bureaucratic red tape can prove more of a problem than the beasts that they hope to uncover!

In addition, there are areas of the world to which

all outsiders and often even their own scientists are denied access for long periods of time. Consequently, there is no way in which traditional reports of mystery creatures in these localities can be pursued at all. The dinosaurian lake monsters in parts of Tibet out of bounds to foreigners, the striped Peruvian mystery cat whose habitat is frequented by drug traffickers and terrorist groups, those unidentified beasts inhabiting whichever portions of Africa are, tragically, involved in warfare at the time of this book's publication – all are destined to remain a mystery for as long as the frontiers to their world remain closed to scientific exploration.

Since 1992, Vu Quang has hosted the discovery of not only *Pseudoryx* but also three distinctive new species of highly primitive deer (giant muntjac *Megamuntiacus vuquangensis*, slow-moving deer, and black deer); there is the holy goat *Pseudonovibos spiralis* too, from South Vietnam, with horns akin to motorbike handlebars! It is surely no coincidence that Vu Quang (now a nature reserve, recently enlarged from 64 to 240 square miles) was previously out of bounds to the outside world and Vietnamese scientists alike for many years, due to the Vietnamese War and accompanying political upheavals.

I have on file reports of a mysterious jumping snake reported from the environs of Sarajevo, a spotted leonine cat called the *ikimizi* in Rwanda, an astonishing crowing serpent from Haiti, and hairy man–beasts in Cambodia. The current political situations in their provenances dictates that none of these animals will be sought after in the foreseeable future – always assuming, of course, that they themselves survive the conflicts. One frequent by-product of human warfare is the decimation of specialized or susceptible local fauna.

Whenever I am interviewed by the media concerning cryptozoology, there is one question that is voiced time and time again. Do cryptozoologists receive financial backing from scientific establishments, and if not, why not? The answer to the first part of that question is simple – no! As for the answer to the second part, scientific establishments and research granting bodies tend to view the funding of cryptozoological expeditions and research as a high-risk, low-return venture.

Taking into account all of the reasons already outlined here concerning why mystery animals tend to stay undiscovered, there is a greater than even chance that success will not come on the very first outing. With any difficult undertaking, practice makes perfect, but in the real world there is usually only one chance on offer – especially when large amounts of money are being sunk into it. In short, it is much easier (and much more profitable from a financial standpoint) for science to denounce mystery beasts as the product of native fable and fantasy than to provide the necessary backing to uncover the truth. Consequently, the cryptozoologist tends to be very much on his own, which inevitably places great restrictions upon the extent of any project that he may wish to undertake.

Also worth bearing in mind is that many of those cryptozoological investigations which have actually achieved their goals tended to involve on-site researchers rather than those visiting from elsewhere. This clearly underlines the value of knowledge and experience concerning a particular terrain – thereby harking back to what I said earlier regarding the importance of paying serious attention to local testimony.

Thus, the Vu Quang panorama of new species was brought about by Dr John MacKinnon, who has been working in south-east Asia for 20 years. Sir Harry Johnston was governor of Uganda (which at that time encompassed part of what is now Zaire) when he successfully investigated reports of the okapi. Captain Richard Meinertzhagen had been stationed in Kenya when he pursued and, in 1904, exposed the giant forest hog *Hylochoerus meinertzhageni*. Zoologist Dr Peter Hocking, who is currently investigating with great promise the apparent existence in Peru of four different mystery cats and a large baboon-like monkey called the *isnachi*, was born there and has been working professionally there for years. And so on.

Even so, it must be said that sheer luck also plays a noticeable part in the unveiling of mystery beasts. Indeed, there really ought to be a cryptozoological equivalent of the familiar old adage 'A watched pot never boils' – something along the lines of 'A sought-after mystery beast is never found' – because there is no doubt that many remarkable animals have been discovered more by accident than by design.

The coelacanth is a case in point. Were it not for the fact that a lone specimen wandering far from its normal Comoro seas was captured off South Africa at the very time that the local museum had taken on a young curator who was particularly interested in fishes, and who just so happened to spot its fin sticking out from beneath a pile of sharks that had otherwise completely concealed it from view, science may still be unaware of the existence of a living species of crossopterygian – and the Comoro natives may still be using its scales to mend their bicycle tyres' punctures in blissful ignorance of this species' immeasurable zoological significance. If this storyline

had been used in a work of fiction, it would have been severely criticized for being hopelessly contrived – yet it is of course all perfectly true!

Even more bizarre is the fact that some important new animals had actually been represented by specimens in museums for many years before their identity as undescribed species was finally realized. These include such species as the distinctly primeval Congo peacock *Afropavo congensis*, the 'living fossil' crustacean *Neoglyphea inopinata*, the giant pied-billed grebe *Podilymbus gigas*, the gastric-brooding frog *Rheobatrachus silus*, Madagascar's giant striped mongoose *Galidictis grandidiensis*, the greater yellow-headed vulture *Cathartes melambrotus*, and Delcourt's giant gecko *Hoplodactylus delcourti*.

Still more remarkable, during the early 1920s a living pygmy chimpanzee *Pan paniscus* was daily masquerading as a common chimp at Amsterdam Zoo several years before its species was 'officially' discovered by science!

Who knows what other unrecognized zoological treasure trove may be lurking, unlisted and unlooked for, ignored and incognito, within the vaults of the world's museums? Such proof of prehistoric persistence as a dusty but genuine *chipekwe* horn, a bona fide *makalala* skull, or the pelt of a *waheela*? Perhaps even – wonder of wonders – a copy of the elusive thunderbird photo! Stranger things have happened in cryptozoology.

Indeed, one of the most dispiriting facets of this emerging discipline's complex history is the surprising frequency with which science has been within a fingertip's reach of obtaining incontrovertible physical evidence for the reality of various prehistoric survivors – only for that selfsame evidence to lose no time in slipping back into irretrievable obscurity.

What could zoology have learnt from the Gambian sea serpent's decapitated head, or from the baby Caddy that spent a day swimming in a bucket aboard its captor's ship? What would the jailed 'tigelboat' have proven to be? Would the Tampa souvenir seller's barrel of scales, or the artist's necklace, have marked the debut of a second species of living coelacanth? If the missing thunderbird photo really did exist, what happened to the creature that it depicted? And where do the butchered *mokele-mbembe*'s bones from 1959 lie concealed?

If any of the prehistoric survivors surveyed here are somehow discovered one day, the palaeontological texts will require a major rewrite – and for two quite different reasons.

No amount of fossils, however well-preserved, can compete with a living specimen for providing biological information. At the same time, however, any prehistoric survivor discovered alive and well will be an evolved species – as opposed to one plucked directly from the Jurassic or wherever else in geological time it existed. In many ways, therefore, its correspondence to its fossilized antecedents will be analogous to the image we receive of ourself when gazing into any of the trick, distorting mirrors at a funfair.

All in all, there promises to be some exciting and unpredictable times ahead for zoology should any of this book's beasts decide to abandon its anonymity and seek fame (if not fortune) on the scientific stage.

It is strange, even somewhat paradoxical, to consider that many major zoological discoveries of the future may prove to have been drawn forth from the long-distant past – but perhaps we ought not to be greatly surprised. After all, as Pinero astutely recognized: 'The future is only the past again, entered through another gate.'

Appendix: the International Society of Cryptozoology

ANYONE interested in the possibility that certain prehistoric lineages have persisted undetected by science into modern times, and wishing to learn more about those discussed in this book, should consider joining the International Society of Cryptozoology. The world's only scientific society devoted to the subject of unexpected animals in time and space, its membership is open to everyone. Members annually receive four newsletters and its scientific journal, *Cryptozoology*. For further details, contact: J. Richard Greenwell, The Secretary, International Society of Cryptozoology, PO Box 43070, Tucson, Arizona 85733, USA.

Other publications that I recommend to anyone interested in cryptozoology are:

Animals and Men, Jonathan Downes (Ed.), 15 Holne Court, Exwick, Exeter, Devon EX4 2NA, UK.

Athene, Endymion Beer (Ed.), Tawside, 30 Park Avenue, Barnstaple, Devon EX31 2ES, UK.

Exotic Zoology newsletter, Matthew Bille (Ed.), 3405 Windjammer Drive, Colorado Springs, Colorado 80920, USA.

Fate, Terry O'Neill (Ed.), PO Box 64383, St Paul, Minnesota 55164–0383, USA.

Folklore Frontiers, Paul Screeton (Ed.), 5 Egton Drive, Seaton Carew, Hartlepool, Cleveland TS25 2AT, UK.

Fortean Times, Bob Rickard/Paul Sieveking (Eds.), Box 2409, London NW5 4NP, UK.

Nessletter, Rip Hepple (Ed.), Huntshieldford, St Johns Chapel, Bishop Auckland, Co. Durham DL12 1RQ, UK.

Strange Magazine, Mark Chorvinsky (Ed.), PO Box 2246, Rockville, Maryland 20847, USA.

Wild About Animals, Brenda Marsh (Ed.), 21 Heathmans Road, Fulham, London SW6 4GP, UK.

Wonders, Mark A. Hall (Ed.), Box 3153, Butler Station, Minneapolis, Minnesota 55403, USA.

Dinosaurland

I wish to offer a special vote of thanks to Drayton Manor Park and Zoo, and to its managing director, Mr G.H.H. Bryan, for very kindly permitting me to include in this book various photographs of mine taken at Drayton Manor Park's spectacular Dinosaurland exhibit. Featuring more than 20 life-sized, and life-like, replicas of dinosaurs, plesiosaurs, terror bird, pterosaur, mammoth, and other prehistoric colossi, Dinosaurland is a breathtaking extravaganza that I thoroughly recommend to anyone seeking a monstrously enjoyable encounter with the giant creatures of the distant (and not-so-distant!) past.

Selected Bibliography

To restrict this bibliography to a manageable length, I have confined its listing wherever possible to cryptozoological references. Those non-cryptozoological sources included here are ones whose content has been specifically discussed or incorporated within this book's main text.

General References

ALEXANDER, R. McNeill, *Dynamics of Dinosaurs and Other Extinct Giants*, Columbia University Press: New York (1989).

BORD, Janet and BORD, Colin, *Alien Animals* (revised ed.), Panther: London (1985).

BROOKESMITH, Peter (Ed.), *Creatures From Elsewhere*, Orbis: London (1984).

BURTON, Maurice, *Living Fossils*, Thames & Hudson: London (1954).

COHEN, Daniel, *The Encyclopedia of Monsters*, Dodd, Mead: New York (1982).

COX, Barry, *et al.* (Consultants), *Macmillan Illustrated Encyclopedia of Dinosaurs and Prehistoric Animals*, Macmillan: London (1988).

HALL, Mark A., *Natural Mysteries* (revised ed.), Mark A. Hall Publications and Research: Bloomington (1991).

HEUVELMANS, Bernard, *On the Track of Unknown Animals*, Rupert Hart-Davis: London (1958); *Sur la Piste des Bêtes Ignorées*, Plon: Paris (1955); *Les Derniers Dragons d'Afrique*, Plon: Paris (1978); 'Annotated Checklist of Apparently Unknown Animals With Which Cryptozoology is Concerned', *Cryptozoology*, 5: 1–26 (1986).

LEY, Willy, *The Lungfish and the Unicorn*, Modern Age: New York (1941); *Exotic Zoology*, Viking Press: New York (1959).

McGOWAN, Christopher, *Dinosaurs, Spitfires, and Sea Dragons*, Harvard University Press: Oxford (1991).

MACKAL, Roy P., *Searching For Hidden Animals*, Doubleday: Garden City (1980).

MICHELL, John and RICKARD, Robert J.M., *Living Wonders. Mysteries and Curiosities of the Animal World*, Thames & Hudson: London (1982).

RICH, Pat V., van TETS, G.F. (Eds.), and KNIGHT, Frank, *Kadimakara. Extinct Vertebrates of Australia*, Pioneer Design Studio: Lilydale (1985).

SCHOUTEN, Peter, *The Antipodean Ark*, Angus & Robertson: London (1987).

SHUKER, Karl P.N., *Extraordinary Animals Worldwide*, Robert Hale: London (1991); 'Living Fossils. A Fortean Times Guide to Dinosaurs in the 20th Century', *Fortean Times*, No. 67 (February–March, a 4-page colour supplement) (1993); *The Lost Ark. New and Rediscovered Animals of the 20th Century*, HarperCollins: London (1993).

SHUKER, Karl P.N. (Consultant), *Man and Beast*, Reader's Digest: Pleasantville (1993); *Secrets of the Natural World*, Reader's Digest: Pleasantville (1993).

SHUKER, Karl P.N. *et al.* (Consultants), *Almanac of the Uncanny*, Reader's Digest: Surry Hills (1995).

WARD, Peter D., *On Methuselah's Trail. Living Fossils and the Great Extinctions*, W.H. Freeman: Oxford (1991).

WILKINS, Harold T., *Secret Cities of Old South America*, Library Publishers: New York (1952).

WOOD, Gerald L., *The Guinness Book of Animal Facts and Feats* (3rd ed.), Guinness Superlatives: London (1982).

How Dead are the Dinosaurs?

ANON., 'A Bolivian Saurian', *Scientific American*, 49: 3 (1883).

ANON., 'To Bring Home a Dinosaur Dead or Alive', *Literary Digest*, 64 (28 February): 76–7, 80 (1920).

ANON., 'An Iguanodon From Dahomey', *Pursuit*, 3 (January): 15–16 (1970).

ANON., 'Dinosaur Hunt', *Fortean Times*, No. 42 (autumn): 27 (1984).

ANON., 'Teenager Joins Trek to Search For Mokele', *Leicester Mercury* (Leicester), 23 November (1992).

AGNAGNA, Marcellin, 'Results of the First Congolese Mokele-Mbembe Expedition', *Cryptozoology*, 2: 103–12 (1983).

AVERBUCK, Philip, 'The Congo Water-Dragon', *Pursuit*, 14 (autumn): 104–6 (1981).

BAKKER, Robert, *The Dinosaur Heresies*, Longman: London (1986).

BLANCOU, Lucien, 'Notes sur les Mammifères de l'Equateur Africain Français. Un Rhinocéros de Forêt?', *Mammalia*, 18 (December): 358–63 (1954).

BRIGHT, Michael, 'Meet Mokele-Mbembe', *BBC Wildlife*, 2 (December): 596–601 (1984).

CHEESMAN, Evelyn, *Six-Legged Snakes in New Guinea*, George Harrap: London (1949).

CLARK, Jerome, 'Monstrous Monitors', *Omni*, 6 (July): 98 (1984).

CZECHURA, Gregory V., 'The Emerald Monitor . . . an Addition to the Australian Mainland Herpetofauna', *Memoirs of he Queensland Museum*, 20: 103–9 (1980).

CZERKAS, Stephen, 'Discovery of Dermal Spines Reveals a New Look for Sauropod Dinosaurs', *Geology*, 21 (December): 1068–70 (1992).

DESMOND, Adrian J., *The Hot-Blooded Dinosaurs. A Revolution in Palaeontology*, Blond & Briggs: London (1975).

DUPUY, Georges, 'Le Monstre de "Partridge Creek"', *Je Sais Tout*, 39 (15 April): 403–9 (1908).

FAWCETT, Percy H, *Exploration Fawcett*, Hutchinson: London (1953).

'FULAHN' [HICHENS, William], 'On the Trail of the Brontosaurus and Co.', *Chambers's Journal* (Series 7), 17 (1 October): 692–5 (1927).

GETTINGER, Dan, 'Cryptoletter', *ISC Newsletter*, 3 (winter): 11 (1984).

GIBBONS, Bill and RICKARD, Robert J.M., 'Operation Congo Returns', *Fortean Times*, No. 47 (autumn): 22–5 (1986).

GILROY, Rex, 'Australia's Lizard Monsters', *Fortean Times*, No. 37 (spring): 32–3 (1982).

GREENWELL, J. Richard (Ed.), 'Congo Expeditions Inconclusive', *ISC Newsletter*, 1 (spring): 3–5 (1982); 'Special Interview' [with Marcellin Agnagna], *Ibid.*, 3 (summer): 7–9 (1984); 'Mokele-Mbembe: New Searches, New Claims', *Ibid.*, 5 (autumn) 1–7 (1986).

GUERRASIO, John, 'Dinosaur Graffiti – Hava Supai Style', *Pursuit*, 10 (April): 62–3 (1977).

HAGENBECK, Carl, *Beasts and Men*, Longmans, Green, and Co: London (1909).

HALL, Mark A., 'Pinky, the Forgotten Dinosaur', *Wonders*, 1 (December): 51–9 (1992); 'Sobering Sights of Pink Unknowns', *Ibid.*, 1 (December): 60–4 (1992).

HICHENS, William, 'Africa's Mystery Beasts', *Wide World*, 62: 171–6 (1928); 'African Mystery Beasts', *Discovery*, 18 (December): 369–73 (1937).

HUGHES, J.E., *Eighteen Years on Lake Bangweulu*, The Field: London (1933).

IRWIN, J. O'Malley, 'Is the Chinese Dragon Based on Fact, Not Mythology?', *Scientific American*, 114 (15 April): 399, 410 (1916).

JACOBS, Louis, *Quest For the African Dinosaurs*, Villard Books: New York (1993).

JAMES, C.G., 'Congo Swamps Mystery', *Daily Mail* (London), 26 December (1919).

JOLLY, Ben, 'Enter a Dragon That's Queerer Than Nessie', *Daily Telegraph* (London), 28 May (1994).

KOLDEWEY, Robert, *Das Wieder Erstehende Babylon . . .*, J.C. Hinrichs: Leipzig (1913); *Das Ischtar-Tor in Babylon . . .*, J.C. Hinrichs: Leipzig (1918).

LORENZONI, Silvano, 'Extant Dinosaurs: a Distinct Possibility', *Pursuit*, 10 (spring): 60–1 (1977); 'More on Extant Dinosaurs', *Pursuit*, 12 (July): 105–9 (1979).

MACKAL, Roy P., *A Living Dinosaur? In Search of Mokele-Mbembe*, E.J. Brill: Leiden (1987).

MACKAL, Roy P. and POWELL, James H., 'In Search of Dinosaurs' [Mackal–Powell Likouala Expedition Report (Original Text) 26 February 1980 Impfondo, Africa], *Fortean Times*, No. 34 (winter): 8–9 (1980).

MAGIN, Ulrich, 'Living Dinosaurs in Africa: Early German Reports', *Strange Magazine*, No. 6 (November): 11 (1990).

MAY, John, 'Lost Dinosaurs of the Congo', *Curious Facts Monthly*, (August 1981).

MAYOR, Adrienne, 'Griffin Bones: Ancient Folklore and Paleontology', *Cryptozoology*, 10: 16–41 (1991).

MILLAIS, John G., *Far Away Up the Nile*, Longmans, Green, & Co: London (1924).

MOLNAR, Ralph E., 'New Cranial Elements of a Giant Varanid From Queensland', *Memoirs of the Queensland Museum*, 29: 437–44 (1990).

MONKS, John, 'Riddle of Dinosaur in Cave Pictures', *Sunday Express* (London), 7 December (1969).

MORELL, Virginia, 'Roy Mackal, Dinosaur Hunter', *Reader's Digest*, 123 (July): 108–13 (1983).

MURAY, Leo, 'Cheer Up Nessie, You're Not Alone', *Daily Post* (Liverpool), 3 January (1976).

MYERS, George S., 'Asiatic Giant Salamander Caught in the Sacramento River . . . ', *Copeia*, (8 June): 179–80 (1951).

NUGENT, Rory, *Drums Along the Congo. On the Trail of Mokele-Mbembe, the Last Living Dinosaur*, Houghton Mifflin Company: New York (1993).

REGUSTERS, Herman A., 'Mokele-Mbembe. An Investigation Into Rumors Concerning a Strange Animal in the Rupublic [sic] of the Congo, 1981', *Munger Africana Library Notes*, 12 (July): 1–27 (1982).

RICKARD, Robert J.M., 'Monster Man' [interview with Bill Gibbons], *Fortean Times*, No. 67 (February–March): 28–31 (1993).

RIZZI, Jorge A. Livraga, 'Existen aun Animales Prehistoricos?', *Nueva Acrópolis Revista*, No. 158 (March): 23–30 (1988).

RODGERS, Thomas L., 'Report of Giant Salamander in California', *Copeia*: 646–7 (1962).

ROTHERMEL, Mark, GIBBONS, William J., WALLS, Jonathan G.F. and DELLA-PORTA, Joe B., 'Operation Congo – The First British/Congolese Mokele-Mbembe Expedition of 1985/6', Expedition report (unpublished) for Operation Congo (1986).

SAHNI, Ashok, 'Cretaceous-Palaeocene Terrestrial Faunas of India: Lack of Endemism During Drifting of the Indian Plate', *Science*, 226 (26 October): 441–3 (1984).

SANDERSON, Ivan T., 'There Could Be Dinosaurs', *Saturday Evening Post*, 220 (3 January): 17, 53, 56 (1948).

SASS, Herbert R., quoted in: ANON., 'The Pink What-Is-It?', *Saturday Evening Post*, 221 (4 December): 10 (1948).

SHUKER, Karl P.N., 'Lesser-Known Lake Monsters', *Fate*, 43 (September): 75–86 (1990); 'Rainbow Dragons and Marine Elephants', *Ibid.*, 45 (January): 57–66 (1992); 'Living Dinosaurs', *Me* (London), 28 July: 56–7 (1993).

SLOAN, Robert E., *et al.*, 'Gradual Dinosaur Extinction . . . in the Hell Creek Formation', *Science*, 232 (2 May): 629–33 (1986).

SMITH, Alfred A., *Trader Horn*, Readers Library Publishing Co.: London (1931).

SMULLEN, Ivor, 'Do Dinosaurs Still Exist?', *Weekend* (London), 7 October (1981).

VAN VALEN, Leigh and SLOAN, Robert E. 'Contemporaneity of Late Cretaceous Extinctions', *Nature*, 270 (10 November): 193 (1977).

VINE, Brian, 'I Aim to Bring Back a Live Dinosaur. Dr. Roy Mackal Talking to Brian Vine: New York', *Daily Express* (London), 26 June (1981).

WAVELL, Stewart, *The Lost World of the East. An Adventurous Quest in the Malayan Hinterland*, Souvenir Press: London (1958) .

WILKINS, Harold T., *Monsters and Mysteries*, James Pike: London (1973).

WIRTH, Diane E., 'Dinosaurs in Pre-Columbian Art', *Pursuit*, 17 (spring): 13–16 (1984).

Things With Wings

ANON., 'Terror Bird in S.R. Swamp', *Rhodesia Herald* (Salisbury), 26 March (1957); 'Ape-Man in City Office More Likely Than Pterodactyl in S.R. Swamp – Museum Director', *Ibid.*, 29 March (1957); 'Pterodactyls Seen Near Northern Rhodesian River', *Ibid.*, 2 April (1957); 'Museum Director Says There are No Flying Reptiles', *Ibid.*, 5 April (1957).

ANON., 'Last of Condors Captured in Bid to Save Species', *Express and Star* (Wolverhampton), 1 June (1987).

ANON., 'Andean Condor Flaps Wings and Takes Off', *Plain Dealer* (Cleveland, Ohio), 20 December (1988).

ARMSTRONG, Perry A., *The Piasa, Or the Devil Among the Indians*, E.B. Fletcher: Morris (1887).

BALOUET, Jean-Christophe, 'Les Étranges Fossiles de Nouvelle-Calédonie', *La Recherche*, 15 (March): 390–2 (1984).

BENEDICT, W. Ritchie, 'Benedict Hot on Thunderbird Photo Trail', *Strange Magazine*, No. 6: 44 (1990); 'Thunderbird Photograph Investigation,' *Ibid.*, No. 11 (spring–summer): 39 (1993); 'The Search For the Thunderbird Photo', *Ibid.*, No. 12 (fall–winter): 39 (1993).

'BONOMI', 'On a Gigantic Bird Sculptured on the Tomb of an Officer of the Household of Pharaoh', *American Journal of Science*, 49 (October): 403–5 (1845).

BURTON, Maurice, 'Gone For Ever?', *Animals*, 3 (18 February): 308 (1964).

BURTON, Maurice and BENSON, C.W., 'The Whale-Headed Stork or Shoe-Bill: Legend and Fact. Parts I & II', *Northern Rhodesia Journal*, 4: 411–26 (1961).

CAMPBELL. Kenneth E. and TONNI, Eduardo P., 'Size and Locomotion in Teratorns (Aves: Teratornithidae)', *Auk*, 100: 390–403 (1983).

CLARK, Jerome and COLEMAN, Loren, *Creatures of the Outer Edge*, Warner: New York (1978).

COLEMAN, Loren, *Curious Encounters*, Faber & Faber: London (1985).

GOSS, Michael, 'Pterosaurs Over Texas', *The Unknown*, No. 5 (November): 46–50 (1985).

GREENWELL, J. Richard (Ed.), 'Big Bird is Back', *ISC Newsletter*, 2 (winter): 8–9 (1983); 'Highlights of Galveston Meeting' [including Mackal's talk re Namibian pterosaurs], *Ibid.*, 10 (summer): 4–5 (1991).

GRISCELLI, Paul, 'Deux Oiseaux Fossiles de Nouvelle-Calédonie', *Bulletin de la Société d'Etudes Historiques de Nouvelle-Calédonie*, 29: 3–6 (1976).

HALL, Mark A., *Thunderbirds! The Living Legend of Giant Birds*, Mark A. Hall Publications and Research: Bloomington (1988); 'Thunderbirds!', *Wonders*, 1 (April): 1–8 (1992).

HEUVELMANS, Bernard, 'Of Lingering Pterodactyls', *Strange Magazine*, No. 6 (November): 8–11, 58–60 (1990).

HILDEBRAND, Norbert, 'The Monster on the Rock', *Fate*, 7 (March): 13–19 (1954).

HOCH, Ella, 'Reflections on Prehistoric Life at Umm an-Nar (Trucial Oman) Based on Faunal Remains From the Third Millenium BC', *Geological Museum of the University of Copenhagen, Contributions to Palaeontology*, No. 283: 1–50 [589–638] (1979).

JEFFREYS, Mervyn D.W., 'African Pterodactyls', *Journal of the Royal African Society*, 43: 72–4 (1943).

LARSEN, Carl, 'The Tuscarora Mountain T-Birds', *Pursuit*, 15 (fall): 106–7 (1982).

LAWSON, Douglas A., 'Pterosaur From the Latest Cretaceous of West Texas: Discovery of the Largest Flying Creature', *Science*, 187 (14 March): 947–8 (1975).

LYMAN, Robert R., *Amazing Indeed. Strange Events in the Black Forest, Vol. 2*, Potter Enterprise: Coudersport (1973).

MARSCHALL, Count, 'Oiseau Problématique' [*makalala*], *Bulletin de la Société Philomatique* (7th Series), 3: 176 (1878–9).

MARSHALL. Larry G., 'The Terror Bird', *Field Museum of Natural History Bulletin*, 49: 6–15 (1978).

MELLAND, Frank H., *In Witchbound Africa*, Seeley Service: London (1923).

MOURER-CHAUVIRÉ, Cécile and POPLIN, François, 'Le Mystère des Tumulus de Nouvelle-Calédonie', *La Recherche*, 16 (September): 1094 (1985).

PADIAN, Kevin and BRAGINETZ, Donna, 'The Flight of Pterosaurs', *Natural History*, 97 (December): 58–65 (1988).

PEARL, Jack, 'Monster Bird That Carries Off Human Beings!', *Saga*, (May): 29–31, 83–85 (1963).

PERCIVAL, A. Blayney, *A Game Ranger on Safari*, Nisbet & Co: London (1928).

PITMAN, Charles R.S., *A Game Warden Takes Stock*, James Nisbet: London (1942).

POPLIN, François and MOURER-CHAUVIRÉ, Cécile, '*Sylviornis neocaledoniae* . . . Oiseau Géant Éteint de l'Ile des Pins (Nouvelle-Calédonie)', *Geobios*, No. 18 (February): 73–97 (1985).

POUCHET Felix A., *The Universe*, Blackie & Son: London (1873).

PRICE, G. Ward, *Extra-Special Correspondent*, George Harrap: London (1957).

SANDERSON, Ivan T., *Investigating the Unexplained*, Prentice Hall: Eaglewood Cliffs (1972).

SCHAEFFER, Claude E., 'Was the California Condor Known to the Blackfoot Indians?', *Journal of the Washington Academy of Sciences*, 41 (June): 181–91 (1951).

SHUKER, Karl P.N., 'The Search For the Thunderbird Photo', *Strange Magazine*, No. 12 (fall–winter): 38 (1993).

SIBLEY, Charles G. and AHLQUIST, Jon E., *Phylogeny and Classification of Birds: A Study in Molecular Evolution*, Yale University: London (1990).

SMITH, J.L.B., *Old Fourlegs. The Story of the Coelacanth*, Longmans, Green, & Co: London (1956).

SPITZ-BOMBONNEL, Zoé, 'Animaux Perdus et Non Retrouvés', *Le Chasseur Français*, (June): 375 (1959).

'STANY', *Loin des Sentiers Battus, Vol. 4 – Douze Femmes*, Table Ronde: Paris (1953).

SUTHERLY, Curt, 'Great Birds of the Allegheny Plateau', *Caveat Emptor*, No. 20 (winter): 21–4 (1989).

TRAJANO, E. and de VIVO, M., '*Desmodus draculae* . . . Reported for Southeastern Brasil [sic], With Paleoecological Comments . . . ', *Mammalia*, 55: 456–9 (1991).

WELLNHOFER, Peter, *The Illustrated Encyclopedia of Pterosaurs*, Salamander: London (1991).

WIMAN, Carl, 'Ein Gerücht von einem lebenden Flugsaurier', *Natur u. Museum*, 58: 431–2 (1928).

Monsters From the Ancient Waters

ANON., 'The Great Sea-Serpent – Evidences of the Former Appearance of the Sea-Serpent – The Great American Sea-Serpent', *Illustrated London News*, 13 (28 October): 264–6 (1848).

ANON., 'A Large Turtle', *Scientific American*, 48: 292 (1883).

ANON., 'The Squids From Onondaga Lake, N.Y.', *Science*, 16 (12 December): 947 (1902).

ANON., 'Scientists to Search For Swedish Monster', *The Trentonian* (Trenton – N.J.), 5 April (1987).

ANON., 'Nahuelito: Creature Story Makes Waves', *Times* (Picayune), 28 March (1989).

ANON., 'Jeg var Søslangen i Loch Ness', *Hjenmet*, No. 47, (1992).

ANON., 'Des Coelacanthes dans le Golfe du Mexique?', *Science et Vie*, No. 911 (August): 17–18 (1993).

ANON., 'Are There Nessies in the Pacific?', *Ceefax* [BBC teletext news service] (London), 30 September: 175 (1993).

ALDERTON, David, *Breakfast With a Bigfoot*, Beaver: London (1986).

BAUER, Henry, *The Enigma of Loch Ness. Making Sense of a Mystery*, University of Illinois Press: Urbana (1986).

BIRD, Sheila, 'Morgawr Joke is a Monstrous Lie', *Packet* (Falmouth), 30 August (1985).

BORGES, Jorge Luis, *The Book of Imaginary Beings* (revised ed.), Penguin: Middlesex (1974).

BOWEN, Henry, 'A Monstrous Sea Serpent', Privately printed information sheet (1817).

BRENTJES, B., 'Eine Vor-Entdeckung des Quastenflossers in Indien?', *Naturwissenschaftliche Rundschau*, 25: 312–13 (1972).

BRIGHT, Michael, 'Salty Tales II', *BBC Wildlife*, 5 (January): 13–14 (1987); *There are Giants in the Sea*, Robson: London (1989).

BUFFETAUT, Eric, 'Vertical Flexure in Jurassic and Cretaceous Marine Crocodilians and Its Relevance to Modern "Sea-Serpent" Reports', *Cryptozoology*, 2: 85–9 (1983).

BURTON, Maurice, *The Elusive Monster*, Rupert Hart-Davis: London (1961).

CAHILL, Tim, 'A la Recherche du Continent Perdu', *GEO*, No. 35 (January): 78–101 (1982).

CHŌNO, Kenji, 'Issie of Japan's Lake Ikeda', *Elsewhen*, 2(4): 9 (1991).

CHORVINSKY, Mark, 'Tony "Doc" Shiels: Magic and Monsters – Photographs Investigation', *Strange Magazine*, No. 8 (fall): 8–11, 46–8 (1991).

COSTELLO, Peter, *In Search of Lake Monsters*, Garnstone Press: London (1974).

CRUICKSHANK, Arthur, SMALL, Philip G. and TAYLOR, Michael A., 'Dorsal Nostrils and Hydrodynamically Driven Underwater Olfaction in Plesiosaurs', *Nature*, 352 (4 July): 62–4 (1991).

DASH, Mike, 'The Dragons of Vancouver', *Fortean Times*, No. 70 (August–September): 46–8 (1993).

DINSDALE, Tim, *The Leviathans*, Routledge & Kegan Paul: London (1966); rev. ed., Futura: London (1976); 'The Rines/Edgerton Picture', *Photographic Journal*, (April): 162–5 (1973); *Loch Ness Monster* (4th ed.), Routledge & Kegan Paul: London (1982).

ELLIS, Richard, *Monsters of the Sea*, Alfred Knopf: New York (1994).

'F, Mary', 'Sir: Kindly Find Enclosed One Sea Serpent', *Packet* (Falmouth), 5 March (1976).

FELL, H. Barry, *Bronze Age America*, Little, Brown: London (1982).

FORSTNER, Freiherr von, 'Das schottische Seeungeheuer schon von *U 28* gesichtet', *Deutsche Allgemeine Zeitung* (Tübingen), 19 December (1933).

FRAIR, W., *et al.*, 'Body Temperature of *Dermochelys coriacea*: Warm Turtle From Cold Water', *Science*, 177 (1 September): 791–3 (1972).

FRICKE, Hans, 'Quastie im Baskenland?', *Tauchen*, No. 10 (October): 64–7 (1989).

GAAL, Arlene, *Ogopogo – The True Story of the Okanagan Lake Million Dollar Monster*, Hancock House: Surrey – British Columbia (1986).

GEORGE, Uwe, 'Venezuela's Islands in Time', *National Geographic*, 175 (May): 526–61 (1989).

GIBSON, J.A. and HEPPELL, David (Eds.), *The Search For Nessie in the 1980's*, The Scottish Natural History Library: Kilbarchan (1988).

GINGERICH, Philip D., *et al.*, 'Hind Limbs of Eocene *Basilosaurus*: Evidence of Feet in Whales', *Science*, 249 (13 July): 154–7 (1990).

GOSS, Michael, 'Do Giant Prehistoric Sharks Survive?', *Fate*, 40 (November): 32–41 (1987).

GOULD, Rupert T., *The Case For the Sea Serpent*, Philip Allan: London (1930).

GREENWELL, J. Richard, 'An Endothermic "Nessie"?', *Science*, 200 (19 May): 722–3 (1978); 'Prehistoric Fishing', *BBC Wildlife*, 12 (March): 33 (1994).

GREENWELL, J. Richard (Ed.), 'Lake Champlain Monster Draws Worldwide Attention', *ISC Newsletter*, 1 (summer): 1–4 (1982); 'Champ Photo Analysis Supports Animal Hypothesis', *Ibid.*, 1 (autumn): 5–6 (1982); '"Sea Serpents" Seen Off California Coast', *Ibid.*, 2 (winter): 9–10 (1983);

'Close Encounter in Lake Okanagan Revealed', *Ibid.*, 6 (spring): 1–3 (1987).
HEPPLE, Rip (Ed.), *Nessletter*, Nos. 1... (1974...).
HEUVELMANS, Bernard, *In the Wake of the Sea-Serpents*, Rupert Hart-Davis: London (1968).
HOLIDAY, F.W. and WILSON, Colin, *Goblin Universe*, Llewellyn Publishers: St Paul (1986).
JERAM, Andrew, 'When Scorpions Ruled the World', *New Scientist*, 126 (16 June): 52–5 (1990).
JOSEPH, Edward L., *History of Trinidad*, A.K. Newman: London (1838).
KARPA, Robert, 'Ken Chaplin's Monstrous Obsession', *West [Globe and Mail]*, (November): 73–80 (1989).
LANGTON, James, 'Revealed: the Loch Ness Picture Hoax', *Sunday Telegraph* (London), 13 March (1994).
LARRABEE, John, 'Monster Mania: Champ No Chump in Japan', *USA Today*, 8 September (1993).
LUCAS, Spencer B. and REYNOLDS, Robert E., 'Putative Paleocene Plesiosaurs From Cajon Pass, California, U.S.A.', *Cretaceous Research*, 14: 107–11 (1993).
McEWAN, Graham J., *Sea Serpents, Sailors and Sceptics*, Routledge & Kegan Paul: London (1978).
MACKAL, Roy P., *The Monsters of Loch Ness*, Futura/Macdonald and Janes: London (1976).
MAGIN, Ulrich, 'Forstner Sea Serpent Sighting: a Possible Hoax?', *Strange Magazine*, No. 2: 4 (1988).
MANGIACOPRA, Gary S., *Theoretical Population Estimates of the Large Aquatic Animals in Selected Freshwater Lakes of North America* [thesis submitted to the School of Graduate Studies in partial fulfilment of the requirements for the degree of Master of Arts], Southern Connecticut State University: New Haven (1992 [unpublished]).
MATTERS, Leonard, 'An Antediluvian Monster', *Scientific American*, 127 (July): 21 (1922).
MATTISON, David, 'An 1897 Sea Serpent Sighting in the Queen Charlotte Islands', *British Columbia Historical News*, 17(2): 15 (1964).
MAWNAN-PELLER, A., *Morgawr – The Monster of Falmouth Bay*, Morgawr Productions: Falmouth (1976).
MEURGER, Michel and GAGNON, Claude, *Lake Monster Traditions. A Cross-Cultural Analysis*, Fortean Tomes: London (1988).
MURPHY, Patrick, 'Breeding Caddys Disturbed by Plane', *Times-Colonist* (Victoria, B.C.), 28 July (1993); 'More Sightings Add to Caddy's Stack', *Ibid.*, 31 July (1993); 'Saanich Inlet Attracts Caddy For Breeding, Says Cryptozoologist', *Ibid.*, 16 August (1993).
'N., J.', 'Pas de Coelacanthes dans le Golfe du Mexique!', *Science et Vie*, No. 913 (October): 6 (1993).
NICHOLLS, Elizabeth and RUSSELL, Anthony, 'The Plesiosaur Pectoral Girdle: The Case For a Sternum', *Neues Jahrbuch für Geologie und Paläontologie Abhandlungen*, 182: 161–85 (1991).
PARK, Penny, 'Beast From the Deep Puzzles Zoologists' [Caddy photo from 1937], *New Scientist*, 137 (23 January): 16 (1993).
SANDERSON, Ivan, *Follow the Whale* (published 1956; reprinted by Cassell: London, 1958).
SCOTT, Peter, 'Why I Believe in the Loch Ness Monster', *Wildlife*, 18 (March): 110–11, 120–21 (1976).
SCOTT, Peter and RINES, Robert, 'Naming the Loch Ness Monster', *Nature*, 258 (11 December): 466–8 (1975).
SERREC, Robert le, 'The Barrier Reef Monster', *Everybody's Magazine*, (31 March): 8–10 (1965).
SHUKER, Karl P.N., 'The Gambian Sea-Serpent', Parts 1 and 2, *The Unknown*, No. 15 (September): 49–53 (1986), and No. 16 (October): 31–6 (1986); 'The Search For Monster Sharks', *Fate*, 44 (March): 41–9 (1991); 'Gambo – the Beaked Beast of Bungalow Beach', *Fortean Times*, 67 (February–March): 35–7 (1993); '"Bring Me the Head of the Sea Serpent!"', *SCAN News*, No. 2 (spring): 11–19 (1993); 'Giant Jellyfish', *Fate*, 47 (March): 60–5 (1994).
STEAD, David G., *Sharks and Rays of Australian Seas*, Angus & Robertson: London (1964).
SWEENEY, James B., *A Pictorial History of Sea Monsters and Other Dangerous Marine Life*, Nelson-Crown: New York (1972).
SYLVA, Donald P. de, 'Mystery of the Silver Coelacanth', *Sea Frontiers*, 12: 172–5 (1966).
TAYLOR, Michael A., 'Plesiosaurs – Rigging and Ballasting', *Nature*, 290 (23 April): 628–9 (1981); 'Lifestyle of Plesiosaurs', *Nature*, 319 (16 January): 179 (1986); 'Stomach Stones For Feeding or Buoyancy? The Occurrence and Function of Gastroliths in Marine Tetrapods', *Philosophical Transactions of the Royal Society B*, 341 (29 July): 163–75 (1993).
THEWISSEN, J.G.M., *et al.*, 'Fossil Evidence For the Origin of Aquatic Locomotion in Archaeocete Whales', *Science*, 263 (14 January): 210–12 (1994).
THOMAS, Lars, *Mysteriet om Havuhyrerne*, Gyldendal Boghandel: Copenhagen (1992).

WESTRUM, Ron, 'Knowledge About Sea-Serpents', *Sociological Review Monograph*, No. 27: 293–314 (1979).

WHYTE, Constance, *More Than a Legend. The Story of the Loch Ness Monster*, Hamish Hamilton: London (1957).

WITCHELL, Nicholas, *The Loch Ness Story* (3rd ed.), Corgi: London (1989).

ZARZYNSKI, Joseph W., *Champ – Beyond the Legend* (2nd ed.), M–Z Information: Wilton (1988).

Lions With Pouches and Horses With Claws

ANON., 'A New Underground Monster', *Nature*, 17 (21 February): 325–6 (1878); 'Underground Monsters', *Ibid.*, 18 (8 August): 389 (1878).

ANON., 'Shot Near Tully – Marsupial Tiger', *Daily Mail* (Brisbane), 12 December (1932).

ANON., 'One Ton Armadillo Caught', *Science News*, 92 (7 October): 347 (1967).

ANON., 'Digging For Man Finds Megaroos', *New Scientist*, 79 (28 September): 920 (1978).

ANON., 'Hunt For the Monster of the Amazon', *New Scientist*, 141 (22 January): 9 (1994).

AFSHAR, A., *et al.*, 'Giraffes at Persepolis', *Archaeology*, 27 (April): 114–17 (1974).

ANDREWS, Charles W., 'An African Chalicothere', *Nature*, 112: 696 (1923).

BACHOFEN-ECHT, A., 'Bildliche Darstellung des Riesenhirsches aus vorgeschichtlicher und geschichtlicher Zeit', *Zeitschrift für Säugetierkunde*, 12: 81–8 (1937).

BROWNE, Malcolm W., 'Legendary Giant Sloth Sought by Scientists in Amazon Rain Forest', *New York Times* (New York), 8 February (1994).

BUXTON, Cara, 'The "Gadett" or Brain-Eater', *Journal of the East Africa and Uganda Natural History Society*, 15: 498 (1919).

CASE, E.C., 'The Mastodons of Båråboedaer', *Proceedings of the American Philosophical Society*, 81 (September): 569–72 (1939).

CHATWIN, Bruce, *In Patagonia*, Jonathan Cape: London (1977).

COLBERT, Edwin H., 'Was the Extinct Giraffe (*Sivatherium*) Known to the Early Sumerians?', *American Anthropologist*, 38: 605–8 (1936); 'The Enigma of *Sivatherium*', *Plateau*, 51(1): 32–3 (1978).

COURTNEY, Roger, *Africa Calling*, George Harrap: London (1936).

CUNINGHAME, R.J., 'The Water-Elephant', *Journal of the East Africa and Uganda Natural History Society*, 21: 97–9 (1912).

DARIUS, Jon, 'Last Gape of the Tasmanian Tiger', *Nature*, 307 (2 February): 411 (1984).

DELABORDE, Jean, 'The Mylodon of Patagonia', *Animal Life*, No. 20 (April): 32–4 (1964).

DEUSEN, Hobart M. van, 'First New Guinea Record of *Thylacinus*', *Journal of Mammalogy*, 44: 279–80 (1963).

DOUGLAS, Athol M., 'The Thylacine: a Case For Current Existence on Mainland Australia', *Cryptozoology*, 9: 13–25 (1990).

DUNCAN, F. Martin, 'A Chinese Noah's Ark', *The Field*, 166 (30 November): 1286–7 (1935).

FARQUHARSON, R.J., 'The Elephant Pipe', *American Antiquarian*, 2: 67–9 (1879).

FELL, H. Barry, *America B.C. Ancient Settlers in the New World*, Wildwood House: London (1982).

FLANNERY, Tim F. and PLANE, Michael D., 'A New Late Pleistocene Diprotodontid (Marsupialia) From Pureni, Southern Highlands Province, Papua New Guinea' [*Hulitherium*], *BMR Journal of Geology and Geophysics, Australasia*, 10: 65–76 (1986).

FORGE, Laurent, 'Un Marsupial Géant Survit-Il en Nouvelle Guinée', *Amazone*, No. 2 (January): 9–11 (1983).

FORTELNY, Joseph G., 'Gibt es einen Australischen Tiger?', *Kosmos*, 63: 292–4 (1967).

GILLETTE, David D. and MADSEN, David B., 'The Short-Faced Bear *Arctodus simus* From the Late Quaternary in the Wasatch Mountains of Central Utah', *Journal of Vertebrate Paleontology*, 12 (March): 107–12 (1992).

GILROY, Rex, 'The Queensland Tiger', *Fortean Times*, No. 62 (April–May): 55–6 (1992); 'Mystery Lions in the Blue Mountains', *Nexus*, (June–July): 25–7, 64 (1992).

GOLOVANOV, Yaroslav, 'Is the Mammoth Really Extinct?', *Sputnik*, (January): 124–7 (1975).

GOSS, Michael, 'Do Mammoths Survive?', *Fate*, 38 (October): 58–67 (1985).

GOSSE, Philip H., *The Romance of Natural History, Second Series*, James Nisbet: London (1867).

GREENWELL, J. Richard, 'The Whatsit of Oz', *BBC Wildlife*, 12 (February): 53 (1994).

GREENWELL, J. Richard (Ed.), 'Giant Bear Sought by Soviets', *ISC Newsletter*, 6 (winter): 6–7 (1987).

HEALY, Tony and CROPPER, Paul, *Out of the Shadows. Mystery Animals of Australia*, Pan Macmillan Australia: Chippendale (1994).

HINSON, David H., 'Cryptoletter', *ISC Newsletter*, 10 (summer): 11 (1991).

HOBLEY, C.W., 'On Some Unidentified Beasts', *Journal of the East Africa and Uganda Natural*

History Society, 3(6): 48–52 (1912).
HOCKING, Peter J., 'Large Peruvian Mammals Unknown to Zoology', *Cryptozoology*, **11**: 38–50 (1992).
HONORÉ, Pierre, *In Quest of the White God*, Hutchinson: London (1963).
JANIS, Christine, 'Fossil Ungulate Mammals Depicted on Archaeological Artifacts', *Cryptozoology*, 6: 8–23 (1987); 'A Reevaluation of Some Cryptozoological Animals', *Ibid.*, 6: 115–18 (1987); 'Hurrah For Hyraces!', *Ibid.*, 7: 104–6 (1988).
JOHNSON, Ludwell H., 'Men and Elephants in America', *Scientific Monthly*, 75: 215–21 (1952).
JORDAN, John A., *The Elephant Stone*, Nicholas Kaye: London (1959).
KURTEN, Bjorn and ANDERSON, Elaine, *Pleistocene Mammals of North America*, Columbia University Press: New York (1980).
LANKFORD, George E., 'Pleistocene Animals in Folk Memory', *Journal of American Folklore*, 93: 293–304 (1980).
LEAKEY, Louis S.B., 'Does the Chalicothere – Contemporary of the Okapi – Still Survive?', *Illustrated London News*, 97 (2 November): 730–3, 750 (1935).
LEY, Willy, 'Is There a Nandi Bear?', *Fate*, **16** (July): 42–50 (1963).
LUMHOLTZ, Carl, *Among Cannibals . . .*, John Murray: London (1889).
McGEEHAN, John, 'Striped Marsupial Cat – Description of Wild Animal Seen on Atherton Tableland', *North Queensland Naturalist*, 6: 3–4 (1938).
MAKEIG, Peter, 'Is There a Queensland Marsupial Tiger?', *North Queensland Naturalist*, 37: 6–8 (1970).
MARTIN, Paul S. and KLEIN, Richard G. (Eds.), *Quaternary Extinctions. A Prehistoric Revolution*, University of Arizona Press: Tucson (1984).
MATTHIESSEN, Peter, *The Cloud Forest*, Pyramid Books: New York (1966).
MENZIES, James I., 'Reflections on the Ambun Stones', *Science in New Guinea*, **13**: 170–3 (1987).
MEYER, Adolf B., 'The Rhinoceros in New Guinea', *Nature*, **11** (4 February): 268 (1875).
MONCKTON, Charles A.W., *Last Days in New Guinea*, John Lane/The Bodley Head: London (1922); *New Guinea Recollections*, John Lane/The Bodley Head: London (1934).
MONTGOMERY, G. Gene (Ed.), *The Evolution and Ecology of Armadillos, Sloths, and Vermilinguas*, Smithsonian Institution Press: Washington (1985).
MORENO, Francisco P. and WOODWARD, A. Smith, 'On a Portion of Mammalian Skin, Named *Neomylodon listai*, From a Cavern Near Consuelo Cove, Last Hope Inlet, Patagonia, With a Description of the Specimen', *Proceedings of the Zoological Society of London*, (21 February): 144–56 (1899).
MORGAN, Greg, 'Gone? Maybe Not' [thylacines in New Guinea], *Garuda*, 30–4 (1993?).
MÜLLER, Fritz, 'Der Minhocao', *Zoologische Garten*, 18: 298–302 (1877).
MURRAY, Peter and CHALOUPKA, George, 'The Dreamtime Animals: Extinct Megafauna in Arnhem Land Rock Art', *Archaeology in Oceania*, **19**: 105–16 (1984).
NEWMAN, Edward, 'The Mammoth Still in the Land of the Living', *The Zoologist* (Series 2), 8: 3731–3 (1873).
OREN, David C., 'Did Ground Sloths Survive in Recent Times in the Amazon Region?', *Goeldiana Zoologia*, No. 19 (20 August) : 1–11 (1993).
PICKFORD, Martin, 'Another African Chalicothere', *Nature*, **253** (10 January): 85 (1975).
PITMAN, Charles R.S., *A Game Warden Among His Charges*, James Nisbet: London (1931).
PRINGLE, Heather, 'Bulldog Bears: Lords of Ice-Age Canada', *Equinox*, 5 (March–April): 11 (1988).
RICHARDSON, H.D., *Facts Concerning the Natural History . . . of the Gigantic Irish Deer*, Orr: Dublin (1846).
ROMER, Alfred S., 'A "Fossil" Camel Recently Living in Utah', *Science*, **68** (6 July): 19–20 (1928); 'A Fresh Skull of an Extinct American Camel', *Journal of Geology*, 37: 261–7 (1929).
ROSEN, Baruch, 'Mammoths in Ancient Egypt?', *Nature*, **369** (2 June): 364 (1994).
RUTTER, Owen, *The Pagans of North Borneo*, Hutchinson: London (1929).
SAINT HILAIRE, Auguste de, 'On the Minhocao of the Goyanes', *American Journal of Science* (Series 2), 4: 130–1 (1847).
SANDERSON, Ivan, 'Giant "Armadillo"?', *Pursuit*, **1** (June): 10–11 (1968); 'Ends Glyptodont', *Ibid.*, **1** (September): 3–4 (1968); 'The Dire Wolf', *Ibid.*, 7 (October): 91–4 (1974).
SAVAGE, Robert J.G. and LONG, Michael R., *Mammal Evolution*, British Museum (Natural History): London (1986).
SHIELDS, Michael J., 'Hope For the Glyptodont?', *Fate*, **21** (May): 123 (1968).
SHUKER, Karl P.N., *Mystery Cats of the World. From Blue Tigers to Exmoor Beasts*, Robert Hale: London (1989); 'Mystery Bears', *Fate*, **42** (April):

30–8 (1989); 'Hoofed Mystery Animals: a Collection of Crypto-Ungulates', Parts I–III, *Strange Magazine*, No. 9 (spring–summer): 19–21, 56–7 (1992), No. 10 (fall–winter): 25–7, 48–51 (1992), and No. 11 (spring–summer): 25–7, 48–50 (1993); 'A Belfry of Crypto-Bats', *Fortean Studies*, 1: 235–45 (1994); 'Vietnam – Why Scientists are Stunned', *Wild About Animals*, (March): 32–3 (1995).

SMITH, G. Elliot, 'Pre-Columbian Representations of the Elephant in America', *Nature*, 96 (25 November): 340–1 (1915), (16 December): 425 (1915), and 96 (27 January): 593–5 (1916).

SOMEREN, G.R. Cunningham van, 'The Nandi Bear', *East Africa Natural History Society Bulletin*, (September–October): 91–3 (1981).

SOUEF, A.S. le and BURRELL, Harry, *The Wild Animals of Australasia . . .*, George Harrap: London (1926).

SPASSOV, Nikolai, 'The Musk-Ox in Eurasia: Extinct at the Pleistocene-Holocene Boundary or Survivor to Historical Times?', *Cryptozoology*, 10: 4–15 (1991).

SUTCLIFFE, Anthony, *On the Track of Ice Age Mammals*, British Museum (Natural History): London (1985).

TUCK, Robert G. and VALDEZ, Raul, 'Persepolis: Nilghai – Not Okapi', *Cryptozoology*, 8: 146–9 (1989).

VARTANYAN, Sergey L., *et al.*, 'Holocene Dwarf Mammoths from Wrangel Island in the Siberian Arctic', *Nature*, 362 (25 March): 337–40 (1993).

WALKER, Alfred O., 'The Rhinoceros in New Guinea', *Nature*, 11 (28 January): 248, and (4 February): 268 (1875).

WIGNELL, Edel (Ed.), *A Boggle of Bunyips*, Hodder & Stoughton: Sydney (1981).

STOP PRESS

ANSELME, Jean-Pierre, 'Les Créatures de l'Ombre', *VSD Nature*, No. 5 (December): 62–3 (1993)

BEER, Endymion (Ed.), 'River Monsters' [South American dinosaurs], *Athene*, No. 6 (spring): 28 (1995)

DOWNES, Jonathan, 'Crocodile Tears' [re *migo*], *Animals and Men*, No. 4 (January): 17–20 (1995).

FAWCETT, Percy H., 'Brontosaurus Hunt', *Daily Mail* (London), 17 December (1919).

GREENWELL, J. Richard, 'Flights of Speculation', *BBC Wildlife*, 13 (March): 25 (1995).

JORDAN, John A., 'The Brontosaurus – Hunter's Story of Tusked and Scaly Beast', *Daily Mail* (London), 16 December (1919); *Elephants and Ivory*, Rinehart: London (1956).

JOYE, Eric, 'Le Mourou-ngou se Porte Bien!!!', *Cryptozoologia*, No. 6 (September): 1–5 (1994).

MACKAL, Roy P. *et al.*, 'The Search For Evidence of Mokele-Mbembe in the People's Republic of the Congo', *Cryptozoology*, 1: 62–72 (1982).

MAHAUDEN, Charles, *Kisongokimo – Chasse et Magie Chez les Balubas*, Flammarion: Paris (1965).

SHUKER, Karl P.N., 'Close Encounters of the Serpentine Kind – Monitoring the *Migo*', *Strange Magazine*, No. 15 (spring–summer): 31–2 (1995); '"Operation Mourou-N'gou" – In Search of a Swimming Sabre-Tooth?', *Strange Magazine*, No. 15 (spring–summer): 33 (1995); 'The Migo Movie: A Further Muddying of Murky Waters', *Animals and Men*, No. 5 (April): 22–5 (1995); *Dragons – A Natural History*, Simon & Schuster: London (1995); 'Mystery Cats of Africa', article accepted for publication in *Cat World* (1995); 'Mystery Cats of South America', article accepted for publication in *Cat World* (1995); 'Mystery Cats of Australia', article accepted for publication in *Cat World* (1995); 'Here Be Dragons', article accepted for publication in *Fate* (1996).

VERRILL, A. Hyatt, *Strange Prehistoric Animals and Their Stories*, L.C. Page: Boston (1948).

Index

Abominable snowman 171
Accipitrids 65–6, 69–70
Acinonyx trumani 174
Afropavo congensis 177
Agogwe 172
Alces alces 168–9
Amali 18, 22, 24
Almas 172
Ambulocetus natans 110–11, 118
Ambun beast 137–8
Ameranthropoides loysi 144
Amphicyonids 152
Anabas testudineus 121
Ape, Loys's 144
Aquila chrysaetos 65
Arapaima gigas 121
Archaeocetes 108–13, 118, 126, 128
  armoured 113, 126, 128
Archelon ischyros 119
Arctodus simus 151
Ardea
  bennuides 74
  goliath 73
Argentavis magnificens 67–8
Armadillos 145–8
  giant 148
Artrellia 44
Australopithecines 172
Axolotl 38, 40
Aye-aye, giant 171
Aypa 150

Babirusa137, 164
Baboon, giant 153
Babyrousa babyrussa 164
Badigui 18, 20
Baiji 97
Balaeniceps rex 50–3
Bar-manu 172
Basilosaurus 108–9, 111
Bats
  giant mystery 52, 58–60
  giant vampire 48, 60
Batutut 172
Bear
  Nandi 70, 129, 153–8
  short-faced (bulldog) 151
Bear-dogs 152
Behemoth 32–3, 127
Beni River three-headed monster *see* Monster
Bennu 73–4
'Big Birds' 60–72
Bigfoot 171–2
Birdwing, Queen Alexandra's 175
Boongary 130
Boselaphus tragocamelus 171
Brachiosaurus 34
Bramatherium 170
Breagyps clarki 67
'Brontosaurus' 16, 23, 41, 47
Brontotherium 164–5
Bunyip 138–9
Burramys parvus 12

'Cadborosaurus' 103, 105–7, 110, 177
Caecilians, 147–8
Camel, North American 41, 165
Camelops 41, 165
Carcharodon
  carcharias 122
  megalodon 122–3
Cat, striped Peruvian mystery 149, 176
Catagonus wagneri 12
Cathartes
  aura 63
  melambrotus 177
Cathartids 65, 67–9
Centipede, marine 126, 128
Cephalaspis 121–2
Cephalodiscus graptolitoides 12
Ceratopsians 28
Ceratosaurus 36
Cervus elaphus 168
Cetioscolopendra aeliani 126
Cetorhinus maximus 99
Chalicotheres 129, 155–8
Champ 83–4, 92
Chaousarou 83
Cheetah, Truman's 174
Chemosit/Chimiset 129, 153, 157
Chimpanzee, pygmy 177
Chipekwe 19–20, 28–30, 177
Chuchunaa 172
Coelacanth, 12, 26, 50, 92–3, 97, 119–21, 176–7
  Indian mystery 121
  Mexican mystery 119–21, 177
Coje ya menia 150

Con rit 126–7
Condor
  Andean 61–2, 69–70
  California 61–2, 64–5, 67–70
  great 67
Coq-djingé/Coq-ninji 149
Coragyps atratus 64
Crocodile
  Nile 25, 32, 128
  sea- 113, 116
Crocuta crocuta 154
Crustaceans, giant 126–7
Cryptobranchus alleganiensis 38

Dama dama mesopotamica 170
Dasyurus maculatus 131
Daubentonia robustus 171
Deer
  black 176
  Persian fallow 170
  red 168
  slow-moving 176
Deinotheres 162
Dermochelys coriacea 94
Desmodus draculae 60
Devil-pig, 135–8
Diba 20
Dicerorhinus sumatrensis 164
Dilali 150
Dingonek 150, 173
Dinosaurs 15–47, 93–4
  duck-billed 35
  Ica/Cabrera 41
  living 15–47
  post-Cretaceous fossil 46–7
Diplodocus 16, 20, 22, 28, 34, 42
Diprotodon 137, 139–41
Diprotodonts 45, 135–41
Dobsegna 133
Dragon
  Bel's 32
  Ishtar 31–3
  Komodo 26
Du 74–7
Dzu-teh 171

Eagle
  golden 65–9
  harpy 69
  white-tailed sea 66
Echidna, New Guinea long-nosed 137
Elasmosaurs 34, 91, 97
Elephant
  African 25, 32–3, 161
  water 161–2
Elk
  Irish 167–9
  true 168
Ellengassen 143
Emela-ntouka 18, 20, 28–30
Ephippiorhynchus senegalensis 53
Eurypterids 124–7

Fating 'ho 172
Frog, gastric-brooding 177

Gadett 153–4 *see also Geteit*
Galidictis grandidiensis 177
Garpike 84
Gassingram 149
Gauarge 46
Gecko, Delcourt's giant 177
Geteit 153 *see also Gadett*
Gigantopithecus 171–2
Giraffe 169, 171
Giraffids 169–71
Glyphids 12
Glyptodonts 145–8
Goat, holy 176
Gorilla, mountain 174
Graptolites 12
Grebe, gia pied-billed 177
Griffin 40–1
Guanacos, polydactylous 166
Guaneru 20
Gugu 172
Gyedarra 139, 141
Gymnogyps
  amplus 67
  californianus 61–2
Gyps fulva 69

Hadjel 149
Hadrosaurs 35, 40–2
Haliaeetus albicilla 66
Harpia harpyja 69
Hellbender 38–40
Heron
  bennu 74
  goliath 73–4
Hiachuckaluck 105
Himantura chaophraya 174
Hippopotamus 25, 32–3, 161
Hog, giant forest 26, 176
Homo
  erectus 172
  neanderthalensis 172
Hoplodactylus delcourti 177
Hornbill 51–2
Horse
  pseudo- 166
  thunder 164–5
Horse-eels, Irish 102–3, 109
Huillia 102, 113
Hulitherium thomasettii 137, 140–1
Hyaena
  brevirostris 155
  brunnea 155
Hyaenas 153–6
  brown 155
  giant forest 154–5
  short-faced 155
  spotted 154–5
Hyperhydra egedei 108, 110
Hyrax, giant 158–9

Iceman, Minnesota 172
Iemisch 112, 144
Iguanodon, 21, 32, 37, 42
Ikeda monster *see* Monster
Ikimizi 176
Irizima 18, 20, 30
Irkuiem 150–1
Isiququmadevu 18–19
Isnachi 176
Issie 84

Jago-nini 22, 24
Jellyfishes 125

Kadimakara 139–41
Kakundakari 172
Kangaroo
  giant 141
  goliath 141
  short-faced 141
  titan 141
Katcheeohuskw 160
Kerit 153
Khaiyr monster *see* Monster
Khodumodumo 153
Ki-lin 170
Kikomba 172
Koddoelo 153
Kongamato 49–54
Kronosaurus 113, 115, 118

Labynkyr monster *see* Monster
Latimeria chalumnae 12, 50, 92–3, 97, 119–21
Lemurs, giant 171
Leopard, water 150
*Lepidosiren*146–7
Lepidosteus osseus 84
Leptoptilus crumeniferus 72
Leviathan 78, 127–8
Linguin 47
Lion
  Blue Mountain 135
  marsupial (pouched) 129, 134–5
  water 150
Litopterns 165–6

Living fossils 11–14
Lizards, giant pink Scippo 38–40
Llamas, five-toed 165–6
Lobster, American spiny 126
Loch Ness monster *see* Monster
Long-necks 25, 78–100, 110
Lord of the Deep 123
Lough Fadda monster *see* Monster
Lough Nahooin monster 102
Lungfishes 96, 146

Machairodus 149–50
Marauchenids 166
Macropus titan 141
Maipolina 150
Makalala 72–3, 177
Makara 161
Mamaimé 150
Mammoths
  American 160
  living 159–60
  Mediterranean dwarf 160
  woolly 159–60
Wrangel island pygymy 159–60
Mammut americanum 160
Mammuthus
  jeffersoni 160
  primigenius 159
Man, Neanderthal 172
Man-beasts 13, 171–3, 176
Manatee, African 25, 117
Mapinguary 144–5, 173
Marmore River monster *see* Monster
Marsupials 129–41
Mastodonts, 160–1
  Båråboedaer 161
  North American 160–1
Mbielu-mbielu-mbielu 28, 30
Mbilintu 18–19
Megachasma pelagios 118, 175
Megalania prisca 44–6
Megalobatrachus spp. 38–9
Megaloceros giganteus 167–9
Megalonychids 141, 145
Megalotaria longicollis 93, 96, 99–100, 112
Meganuntiacus vuquangensis 176
Megapodes 74–7
Megasagittarius clamosus 73
Megatheriids 141
Meh-teh 171
Migo (migaua) 102, 110, 128
Minhocão 145–8
Mink, sea 175
Moeritherium 162
Moha-moha 122
Mokele-mbembe 15–28, 32–3, 43, 47, 149, 177
Mongoose, giant striped 177
Monitors 15, 26, 31, 44–6, 115
  Australian giant 44–6
  emerald 44
  Salvadori's 44–5
Monoclonius 28
Monoplacophorans 12
Monster
  Beni River three-headed 43
  Ikeda 84
  Khaiyr 81–2, 93
  Labynkyr 81
  Lake Champlain 83–4, 92
  Loch Ness 78, 85–91, 94, 98, 112
  Lough Fadda 103, 108
  Lough Nahooin 102
  Marmore River 42
  Nahuel Huapi 81
  Okanagan 100–2, 105, 108–10, 112
  Partridge Creek 35–7
  Patenggang 35
  St John's River 37–8
  Storsjon 82–3
  Tian Chai 35
  Wembo (Menbu) 35
  White Lake 81
Moose 168–9
Morgawr 79–81
Moropus 156
Mosasaurs 95, 98, 115, 128
Mourou n'gou 150, 173
Mungoon-galli 44
Muntjac, giant 176
Musk-ox 157
Mustela macrodon 175
Mylodon 142–5, 165
Mylodontids 141–5, 173

Nahvel Huapi monster *see* Monster
Nahuelito 81
Naitaka 100
Ndendecki 25
Ndgoko na majii 161
Neoglyphea inopinata 12, 177
Neomylodon listai 143
Neopilina spp. 12
Nessie 25, 85–91, 98, 112 *see also* Monster
Nessiteras rhombopteryx 89
Ngakula-ngu 20
Ngoloko 172
Nguma-moneme 31
Nilghai 171
Nittaewo 172
Nototherium 137
Notoungulates 166–7
Ntambo wa luy 173
N'yamala 18, 22
Nze-ti-gou 150

Octopuses, freshwater 124–5
Ogopogo 100–2, 105, 108–10, 112
Okanagan monster *see* Monster
Okapi 12, 26, 47, 156, 169–71, 174, 176
Okapia johnstoni 12
Olitiau 52
Ol-maima 150
Omaxsapitau 60, 65
Onza 174
Orang pendek 172
Orang-utan 171
Otters 78, 86, 94, 112
  giant 112, 144
  super- 100, 108, 110–12, 175
Ovibos moschatus, 157
Ox, Vu Quang 26, 175

Pa beuk 97
Palaeopropithecus 171
Paleotragus rouenii 171
Palorchestes 137–9
Pampatheres 147
Pan paniscus 177
Panilurus 126
Panther, water 150
Partridge Creek monster *see* Monster
Patenggang monster *see* Monster
Peacock, Congo 177
Peccary, Chacoan 12
Perch, Indian climbing 121
Persepolis beast 170–1
Phascolonus gigas 140
Phiomia 162
Phorusrhacids 72
Piasa 57–9
Pig, bearded 162
'Pinky' 37–8, 40
Placoderms 121–2
Plesiosaurs 22, 34–5, 42–4, 78–100, 110, 112–13, 115
  Auyan-tepui 81
  endothermic 93–4
  living 22, 34–5, 78, 81, 91–100, 110, 112
  Palaeocene 92
  Patagonian 81
Pliohyrax 158–9
Pliosaurs 78, 115, 118
Plurigibbosus novaeangliae 104
Podilymbus gigas 177

Poebrotherium 165
Possum, mountain 12
Priodontes giganteus 148
Procamptoceras brivatense 173
Procoptodon goliah 141
Protoceratops 40–1
Protylopus 165
Pseudonovibos spiralis 176
Pseudoplesiosaur 99, 118
Pseudoryx nghetinhensis 175–6
Pteranodon 48, 54–6, 58–9
Pterichthyodes 121–2
Pterodactyloids 48, 54, 59
Pterodactyls 41, 48–59, 77, 93
Pteronura brasiliensis 112, 144
Pterosaurs 48–59, 70, 77
  African 48–54
  furry 93
  living 48–59, 70, 77
  Mexican 59, 77
  Neotropical 77
  North American 54–9, 70
Pterygotus 125–6
Pukau 164

Quetzalcoatlus northropi 48, 58–9

Rhamphorhynchoids 48, 54, 56, 58
Rheobatrachus silus 177
Rhincodon typus 123
Rhinoceros
  aquatic 28–30
  Javan 136
  marsupial 137
  New Guinea 135–6
  Sumatran 164
Rhinoceros sondaicus 136
Rhomaleosaurus megacephalus 98
Riftia 97
Rimi 171–2
Row 44

Sabre-tooths 148–50
  aquatic 150, 173
  living 148–50
Sagittarius serpentarius 73
St Johns River monster *see* Monster
Salamander
  Chinese giant 38–9
  Japanese giant 38
  Mexican tiger 40
  pink 38–40
Sasquatch 171–2
Sauropods 16–28, 31–5, 41–4, 46–7
  Acámbaro 41
  Ashanti 20–2
  Colombian 43–4
  Cuenca/Crespi 41
  Granby Stone 41
  Ica 41
  living 17–28, 31–5, 41–4, 47
  spiny 20
  Tucson 41
Scalytail 51–2
Schelk 169
Scoliophis atlanticus 104
Sea millipede 123, 126–7
Sea scorpions 123–7
Sea serpent 25, 70, 78–81, 93–4, 99–100, 103–8, 126–8
  Bali 79
  Cadboro Bay 103, 105–7, 110, 177
  Cook Island 114
  Falmouth Bay 80–1
  Firth of Tay 103, 108
  Fly 79–80, 93
  Gambian 114, 116–18, 177
  Gloucester 104, 107
  Godthaab (Egede's) 108, 110–11, 113
  Gowland Head 105
  Grangense 113–14
  Hook Island 122
  Javan 116
  many-finned 126–8
  many-humped 104, 107, 110
  Meil Bay 79
  Narcissus 126
  Sacramento 113–14
  San Francisco Bay 104–5, 110–11, 113
  Stinson Beach 105, 110
  Stronsay 99
  Tyne 79
  U-28 114
  Zuiyo Maru 99
Sea-worm 107–8, 110–12
  Heroy, 107
Sealions 78, 94–5, 98, 111
Seals
  earless 94
  long-necked, 25, 93–100
Secretary bird, 73
Serpent
  Tasek Bera golden 33–5
  Tasek Chini, 35
Sharks 99, 118, 128
  basking 99
  great white 122–3
  megalodon 122–3
  megamouth 26, 97, 118, 123, 175
  whale 123
Shoebill 50–3
Simba ya mail 150, 173
Sinopithecus 153
Sirrush 31–3
Sivapithecus 171
Sivatheres 169–70
Sivatherium 169–70
Sloths, ground 141–5, 173
Smilodon 149
  populator (*neogaeus*) 149
Snake
  Haitian crowing 176
  Sarajevo jumping 176
  six-legged 44
Sœ-orm 107
Songo 20
'Specs' 124, 126
Squids, Lake Onondaga 125–6
Stegosaurus 30–1, 41
Sthenurus 141
Stingray, Thai giant freshwater 97, 174
Stork
  marabou 71–2
  saddle-billed 53
Storsjön monster *see* Monster
Storsjöodjuret 82–3
Struthiominus 46
Styracosaurus 28
Su/Succurath 142
Super-otter 100, 108, 110–12, 175
Sus barbatus 162
Sylviornis neocaledoniae 74–7

Tanystropheus longobardicus 84
Tapirs 137, 162–4
  Bornean 162–4
  Malayan 162–4
  marsupial 137
Tapirus indicus 162–3
Tasmacetus shepherdi 117
Teh-lma 171
Teratornis
  incredibilis 67
  merriami 67
Teratorns 48, 67–70
  incredible 67
  magnificent Argentine 67–8
  Merriam's 67–8, 70
Terror birds 72
Thalattosuchians 93, 115–16, 118
Theosodon 166
Thescelosaurus 37, 40
Thunderbirds 60–72, 177
Thylacine 130, 133–4
  mainland Australian 133, 135
  New Guinea 133–4
Thylacinus cynocephalus 133
Thylacoleo carnifex 129, 134
Tian Chai monster *see* Monster

Tigelboat 163, 177
Tiger
  mountain 148–9
  Queensland 129–35
  sabre-toothed 148–50
  water 150
Tiger cat 131
Tigre de montagne 149
Titanis walleri 72
Titanopteryx 59
Titanotheres 164–5
Toxodon 166–7
Tratratratra 171
Tree kangaroo
  bondegezou 175
  Lumholtz's 130
Triceratops 22, 28
Trichechus senegalensis 25
Trionyx triunguis 25
Turtles, giant 119
  leathery 94, 119
  soft-shelled freshwater 25
Tylosaurus 41, 115, 128
Typhlonectes 147
Tyrannosaur
  Guatemalan 41
  Hava Supai 40–1
  Ica 41
Tyrannosaurus rex 36–41

Ular tedong, 33–5
Unicorns 170, 173

Varanus
  prasinus 45
  salvadorii 44
Vassoko 149
Vultur gryphus 61
Vulture
  black 64
  greater yellow-headed 177
  griffon 69
  La Brea 67
  turkey 63–4

Waheela 151–2, 177
Warrigal 135
Water-cows, Swedish 82–3
Water monsters 78–128
  Chilean 124–5
  invertebrate 123–7
  long-necked 78–100
  many-humped 100–13
  piscean 119–23
  reptilian 78–100, 113–19, 128
Wembo (Menbu) monster *see* Monster
Whales 78, 95, 101, 128
White Lake monster *see* Monster
Wildman, Chinese 171
Wolf, Tasmanian, 133–4
Wombat, giant 140
Worm, giant tubicolous vent 26

Yahoo 140–1
Yaquaru 150
Yarri 130–5
Yeren 171
Yeti 171
Yowie 140, 172

Zaglossus bruijni 137–8
Zeuglodonts 108–13
  living 108–13
  quadrupedal 111–12
Zygomaturids 137

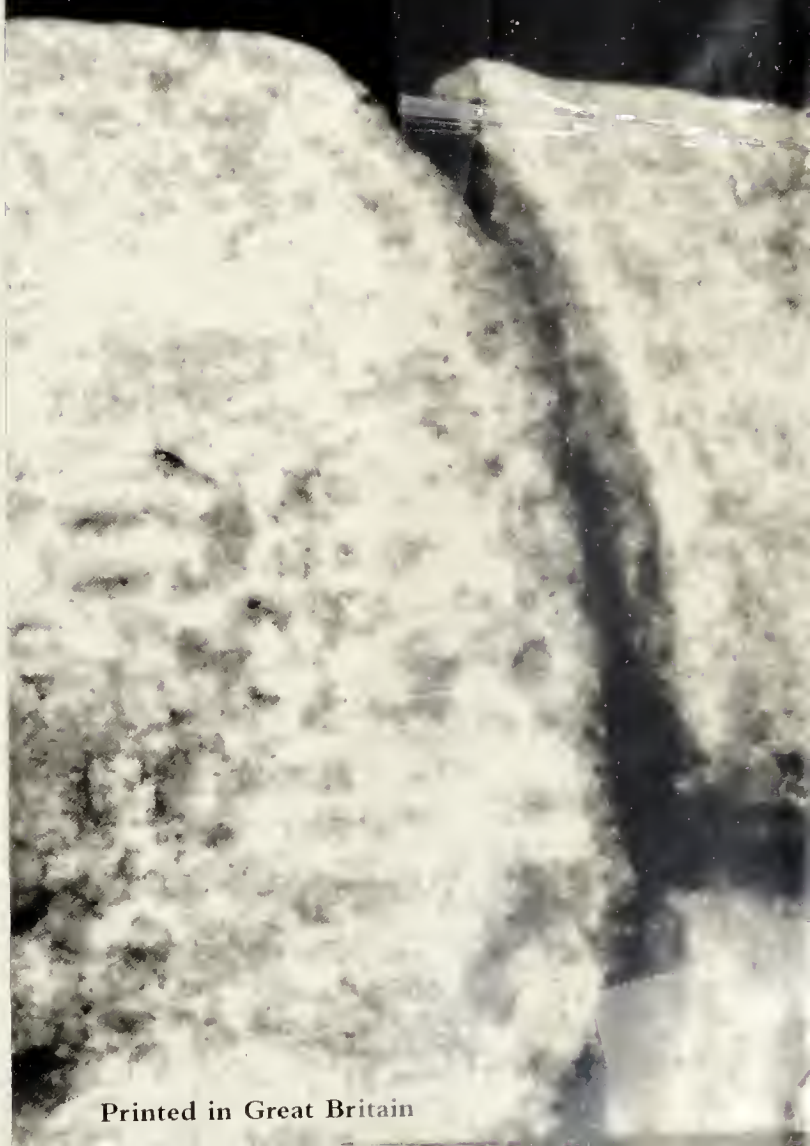
BOSTON PUBLIC LIBRARY
3 9999 03012 737 5

WITHDRAWN
No longer the property of the
Boston Public Library.
Sale of this material benefits the Library.

Dr Karl P. N. Shuker is a zoologist with a lifelong interest in cryptozoology and other subjects about animal anomalies. He studied zoology at the University of Leeds and obtained a PhD in zoology and comparative physiology at the University of Birmingham. He now works as a freelance zoological consultant, lecturer, and writer. He appears regularly on television and radio, journeys throughout the world in the course of his researches, and is widely recognized as one of the world's leading experts in cryptozoology.

Dr Shuker has written numerous articles and several major books devoted to cryptozoological topics. His books include: *Mystery Cats of the World* (1989), *Extraordinary Animals Worldwide* (1991), *The Lost Ark: New and Rediscovered Animals of the 20th Century* (1993) and, acting jointly as consultant and contributor, *Man and Beast* (1993), *Secrets of the Natural World* (1993) and *Almanac of the Uncanny* (1995).

Aside from natural history, Dr Shuker's varied interests range from motorbikes, travel, and the history of cinematic animation to the life and career of James Dean, the Sherlock Holmes novels, and mythology from around the world.



Printed in Great Britain

IN SEARCH OF PREHISTORIC SURVIVORS

ISBN 0-7137-2469-2